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PATENT APPLICATION
10/760,511

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Qian Yang, et al.
Serial No.:	10/760,511
Filed:	January 20, 2004
Group No.:	2129
Confirmation No.	1475
Examiner:	Wilbert L. Starks
Title:	***Using Neutral Networks for Data Mining***

Mail Stop Appeal Brief - Patents
Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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Dear Sir:

Appeal Brief

Appellants have appealed to the Board of Patent Appeals and Interferences (the "Board") from the decision of the Examiner mailed August 23, 2006, finally rejecting all pending Claims 1-19, 22-23, and 26-43. An Advisory Action was mailed November 14, 2006. Appellants filed a Notice of Appeal, with the statutory fee of $500.00, on December 26, 2006. Appellants respectfully submit this Appeal Brief with the statutory fee of $500.00.

Real Party in Interest

Appellants believe this Application is subject to assignment from each of the inventors to Computer Associates Think, Inc.

Related Appeals and Interferences

To the knowledge of Appellants' counsel, no appeals, interferences, or judicial proceedings are related to or will directly affect, be directly affected by, or have a bearing on the Board's decision regarding this Appeal.

Status of Claims

Claims 1-19, 22-23, and 26-43 are pending in this Application, stand rejected pursuant to a Final Office Action mailed August 23, 2006 (the "Final Office Action"), and are all presented for appeal. All pending claims are shown in Appendix A, along with an indication of the status of those claims.

Status of Amendments

All amendments submitted by Appellants have been entered by the Examiner prior to the mailing of the Final Office Action.

Summary of Claimed Subject Matter

This application relates in general to data mining, and more particularly to using neural nets and other artificial intelligence techniques for data mining. (Page 1, Line 25 – Page 2, Line 1)[1]

As use of computers and other information and communication appliances proliferate in the current information age, data (both numeric and non-numeric) frequently is collected from numerous sources, such as the Internet. Further, large amounts of data exist in many databases. Much of the data is collected for archiving purposes only and therefore, in many instances, is stored without organization. Sifting through the morass of data to extract useful information for a specific purpose may be a substantial challenge. (Page 2, Lines 4-13)

For example, business concerns are finding an increasing need, in order to remain competitive in their business market, to effectively analyze and extract useful information from data they and/or others have collected and use the extracted information to improve operation of the business. This, however, often may be a daunting task. (Page 2, Lines 14-19)

Data mining is the analysis of large qualities of data in order to extract useful information from the data, such as for making predictions over new data (also called predictive analysis). Previous commercial products that allow data mining of the wealth of information on the Web require the client application to maintain a predictive model, although a service broker may collect or store raw data and forward it to the client upon demand. Since the client must maintain the predictive model, the resources of the client machine may be overwhelmed when the application is executed. (Page 2, Line 20 – Page 3, Line 6)

The present invention provides tools (in the form of systems and methodologies) for data mining. The tools may include one or more computer programs or software modules stored on a conventional program storage device or computer readable medium, and/or transmitted via a computer network or other transmission medium. (Page 8, Lines 2-7)

Certain embodiments of the present invention provide a data mining system. In one embodiment, the data mining system includes a client and a service broker configured to include an interface to receive a consultation request from the client. The service broker forwards the consultation request to a Neugent to invoke a consultation of the Neugent. After the Neugent is consulted, the service broker forwards to the client a result object returned by the Neugent. (Page 4, Lines 2-9)

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[1] All citations in this section of the Appeal Brief are to Appellants' originally-filed Specification.

The service broker also may include a training interface and receives through the training interface a training request from the client, the training request including training data. The service broker forwards the training request including the training data to the Neugent to invoke training of the Neugent with the training data. The training request may include a parameter specifying a ratio to split the training data between training the Neugent and testing or validating the Neugent. The service broker may forward to the client a training result object returned by the Neugent after training of the Neugent. (Page 4, Lines 10-20)

Certain embodiments of the present invention provide a method for providing to a remote client machine a service to consult a Neugent. In one embodiment, the method includes receiving a consultation request from the remote client machine, forwarding the consultation request to the Neugent to invoke a consultation of the Neugent, and forwarding to the remote client machine a result object returned by the Neugent. (Page 4, Line 21 – Page 5, Line 3)

Certain embodiments of the present invention provide a method for providing to a remote client machine a service to train a Neugent. In one embodiment, the method includes receiving a train request from the remote client machine, forwarding the train request to the Neugent to invoke training of the Neugent, and forwarding to the remote client machine a training result object returned by the Neugent. (Page 5, Lines 4-10)

FIGURE 1A illustrates an example data mining system 10 in a client-server paradigm, according to certain embodiments of the present invention. However, the tools of the present application are not limited to a client-server programming model and may be adapted for use in peer-to-peer systems, message passing systems, as well as other programming models. (Page 8, Lines 8-14)

Data mining system 10 may include a client 11, one or more Neugents 13, and a service broker 15. Service broker 15 may be configured as a server and includes an interface to receive a consultation request from client 11. Service broker 15 may also receive a train request from client 11 and typically is (although it need not be) a remote server. Neugents 13 are described below.

A method for providing to a remote client machine a service to consult a Neugent, in accordance with one embodiment, is described with reference to FIGURES 1A and 2A. After service broker 15 receives a consultation request from remote client machine 11 (step S21), service broker 15 forwards the consultation request to a Neugent 13 to invoke a consultation of the Neugent 13 (step S22). After the Neugent 13 is consulted, service broker 15 forwards to

client 11 a result object returned by the Neugent 13 (step S23). (Page 8, Line 23 – Page 9, Line 7) In one embodiment, the consultation request includes data for consulting a Neugent 13. The Neugent 13 performs a predictive analysis of the data included in the consultation request. In another embodiment, the consultation request includes identification of a source of data for consulting a Neugent 13. The Neugent 13 performs a predictive analysis of input data obtained from the source identified in the consultation request. (Page 9, Lines 8-16)

According to another embodiment, service broker 15 is a remote server. The consultation request from client 11 to the remote server may include an Extended Markup Language document. The Neugent 13 may be server-side. (Page 9, Lines 17-20)

A method for providing to a remote client machine 11 a service to train a Neugent 13, according to one embodiment, is described with reference to FIGURES 1A and 2B. After service broker 15 receives a train request from the remote client machine 11 (step S26), service broker 15 forwards the train request to a Neugent 13 to invoke training of the Neugent 13 (step S27). After the Neugent 13 is trained, service broker 15 forwards to client 11 a training result object returned by the Neugent 13 (step S28). (Page 9, Line 21 – Page 10, Line 4)

A Neugent 13 may group training data patterns into clusters, with each cluster corresponding to a group of similar data patterns, and predict a probability of membership of an input pattern to a selected group. A Neugent may group training non-numeric (for example, textual) patterns into clusters, with each cluster corresponding to a group of similar non-numeric patterns, and predict a probability of membership of an input non-numeric pattern to a selected group.

A Neugent 13 may form a cluster model by grouping training data patterns into a plurality of clusters, with each cluster corresponding to a group of similar data patterns, and determining for each cluster probabilities of transition from the cluster to each of the other clusters. The Neugent 13 predicts a probability of an event occurring by applying an input pattern to the cluster model. (Page 10, Lines 14-20)

A Neugent 13 may form an input-output model associated with a set of training data patterns and predict an output value by applying the model to an input pattern. The Neugent 13 may include a functional-link net. (Page 10, Lines 21-24)

A Neugent 13 may form rules associated with corresponding relationships in a set of training data patterns and predict an outcome by applying the rules to an input pattern. (Page 10, Line 25 – Page 11, Line 3)

Neugents technologies include assorted methodologies for recognizing patterns in data and for using those patterns to make predictions on new data. New data is analyzed to determine the pattern into which it falls, thereby providing a prediction of future behavior based on the behavior that has characterized the pattern in the past. (Page 11, Lines 4-10)

One group of underlying methodologies is often referred as neural net technology. A neural net is a weighted network of interconnected input/output nodes. Neugent technology covers a broader range of pattern recognition methodologies than just neural net models. For example, Neugents may include ClusteringNeugent, DecisionNeugent, EventPredictNeugent, TextClusteringNeugent, and ValuePredictNeugent model methodologies. (Page 11, Lines 11-19)

ClusteringNeugent uses a cluster model methodology that groups patterns that are alike and predicts the probability of membership to a specific group. DecisionNeugent uses a decision tree model methodology that uncovers rules and relationships in data, formulates rules to describe those relationships, and predicts outcomes based upon the discovered rules. EventPredictNeugent uses a cluster model methodology with transition calculation to predict the probability of an event occurring. TextClusteringNeugent uses a cluster model methodology that groups training data patterns comprising textual (or non-numeric) material that are alike and predicts a probability that specified textual (or non-numeric) data with which the model is consulted is a member of (or belongs to) a specific group. ValuePredictNeugent uses a functional-link neural net model methodology to predict the value of a variable (or values for a set of variables). (Page 11, Line 20 – Page 12, Line 13)

A functional-link net is one type of neural net which can be used to model a functional relationship between input and output. A functional-link net may be used to approximate any scalar function with a vector of inputs, x, and an output, y, and therefore is a universal approximator. The structure of a functional-link net with non-linearity fully contained in a functional-link layer is illustrated in FIGURE 3. The nodes in the functional-link layer have associated non-linear basis functions. Since non-linearity is fully contained in the functional-link layer, and the rest of the net may be linear, linear training techniques such as regression-based training may be used with a functional-link net structure. Linear training refers to techniques that solve the parameters in the net through linear algebra techniques. (Page 12, Line 14 – Page 13, Line 3)

Each Neugent 13 provides the following methods, which are commonly referred to collectively as an "Application Programmer Interface" (API), and referred to in connection with Web services simply as "services." (Page 14, Lines 5-8)

"Train" is a process of providing data (also referred to more specifically as training data patterns) to a Neugent 13 so that the Neugent 13 performs statistical or other data analysis of the training data patterns which provides the basis for future predictions. The output of training a Neugent 13 is a model or other data classification mechanism, which becomes the means by which the Neugent 13 recognizes patterns. (Page 14, Lines 9-16)

"Consult" is a process of providing new data to a Neugent 13 (also referred to as data for consulting the Neugent 13) so that the Neugent 13 uses its model, as developed during training, to provide a prediction from the new data. (Page 14, Lines 17-20)

A Web service-enabled implementation of the "train" and "consult" methods of the Neugents 13 according to an example embodiment is described below with reference to FIGURES 1B and 5A through 10F. The train and consult methods are made available to client programs through Web services technology. Typically, only data may be passed between a client 11 and a Neugent 13. Accordingly, the methodologies described in this disclosure place no burden on client 11 to maintain a predictive model. The complexity of client/server interfaces may be reduced by simplifying protocols and by hiding issues (for example, making them transparent to the user) of platform technology mismatches. (Page 14, Line 21 – Page 15, Line 7)

For example, Web services technology may be based on invoking procedures in a remote server (also referred herein as "Web Service Broker" or "WSB"), such as by transmitting an Extensible Mark-up Language (XML) document, which is a text document, over the HTTP protocol, as depicted in FIGURE 1B. In order for Web Service Broker 45 to invoke the train and consult methods of a Neugent 43, the structure of the XML documents calling the corresponding methods of the Neugent 43 is precisely specified. The training and consultation API of the Neugents 43 preferably is rigorously defined so that they can be invoked by the WSB. In addition, an interface is implemented within each respective Neugents 43. (Page 15, Lines 8-20)

Each of the Neugents described above defines its own specification for training and consulting services (see, for example, FIGURES 4A-10F). The common elements of each Neugent interface include input data, train result, and consult result. (Page 15, Lines 21-25)

For both the train and consult services, a collection of data is passed to the Neugent. Data passed to the train service and the consult service way be referred to as training data (also referred herein as "trainData") or consultation data (also referred herein as "consultData"), respectively. In some cases (for example, the ValuePredictNeugent), additional parameters may be passed when training the Neugent, such as parameters for determining the percentage of the training data split between training the model and parameters for validating or testing the model. The Neugents typically use numeric data as input. However, the TextClusteringNeugent also accommodates textual (or other non-numeric) data and the DecisionNeugent accommodates alpha-numeric data. (Page 16, Lines 1-14)

Except for EventPredictNeugent, each Neugent returns an object as a result of a training session. The object provides information about the result of the training session. For ValuePredictNeugent, an object representing the Neugent may be returned as part of the structure of the train result. (Page 16, Lines 15-20)

For each Neugent type, the Neugent returns an object as a result of a consultation. Neugents may differ, however, with regard to a structure of the consultation return object. (See, for example, FIGURES 5A-5K, in which only the TextClusteringNeugent and the ClusteringNeugent return similarly structured objects.) The ValuePredictNeugent may return the ValuePredictNeugent object itself as part of the returned consultation object. (Page 16, Line 21 – Page 17, Line 3)

The specification of Neugents train and consult services may be mapped to the architecture of the Neugent class. The WSB API Interface is described below for the ValuePredictNeugent only. The WSB API can include a number of classes, with the ValuePredictNeugent class including train and consult methods. For example, the ValuePredictNeugent class may include the following train and consult methods: ValueNeugentTrainResult train (Collection of Pattern trainData, Double validationPercentage, Boolean returnResultFlag); and ValueNeugentConsultResult consult (Collection of Pattern consultData). (Page 17, Lines 4-17)

The user sets up a collection of data under the Pattern class. The Pattern class is a container for a row of data passed to the train or consult method. After passing the data collection into the train or consult method, a ValueNeugentTrainResult object, or a ValueNeugentConsultResult object is returned. The ValueNeugentTrainResult class contains the results from the ValuePredictNeugent train method, and may include a variety of fields that

are described more fully in Appellants' Specification and in FIGURE 4A. (Page 17, Line 24 – Page 20, Line 13)

Class diagrams for additional exemple embodiments are shown in FIGURES 5A-5K, 6A-6K, 7A-7G, 8A-8K, 9A-9C and 10A-10F. Similarly named fields have similar functionality as described above. (Page 20, Lines 14-19)

Although some embodiments described herein use a combination of ClusLeringNeugenc, DecisionNeugent, EventPredictNeugent, TextClusteringNeugent and ValuePredictNeugent methodologies, the matter recited in the appended claims may be practiced a selected subset of these Neugents, with or without other Neugents technologies which use clustering, neural net, decision tree and/or other predictive modeling methodologies. (Page 21, Lines 2-9)

With regard to the independent claims currently under Appeal, Appellants provide the following concise explanation of the subject matter recited in the claim elements. For brevity, Appellants do not necessarily identify every portion of the Specification and drawings relevant to the recited claim elements. Additionally, this explanation should not be used to limit Appellants claims but is intended to assist the Board in considering the Appeal of this Application.

For example, independent Claim 1 recites the following:

> A data mining system comprising:
>
> a client machine (e.g., Figures 1A-1B; Page 4, Lines 2-9; Page 4, Line 21 – Page 5, Line 10; Page 8, Line 2 – Page 9, Line 7; Page 14, Line 21 – Page 15, Line 7); and
>
> a service broker (e.g., Figures 1A-1B; Page 8, Lines 15-22) operable to:
>
> receive a consultation request from the client machine through a computer network, the consultation request associated with data for consulting a Neugent, the Neugent being distinct from the client machine (e.g., Figures 1A and 2A; Page 4, Lines 2-5 and 23-25; Page 8, Lines 15-19; Page 9, Lines 8-20; Page 14, Line 17 – Page 15, Line 20; Page 16, Lines 1-14);
>
> forward the consultation request to the Neugent to invoke a consultation of the Neugent, the Neugent operable to perform a predictive analysis with respect to the data for consulting the Neugent that is associated with the consultation request (e.g., Figures 1A and 2A; Page 4, Lines 5-7; Page 4, Line 25 – Page 5, Line 1; Page 9, Lines 1-5 and 8-20; Page 11, Line 4 – Page 13, Line 6; Page 14, Line 17 – Page 16, Line 14); and

forward to the client machine through the computer network a result object returned by the Neugent, the result object comprising a prediction determined by the Neugent with respect to the data for consulting the Neugent (e.g., Figures 1A and 2A; Page 4, Lines 7-9; Page 5, Lines 1-3; Page 9, Lines 5-7; Page 11, Line 4 – Page 13, Line 6; Page 14, Line 17 – Page 15, Line 25; Page 16, Line 15 – Page 17, Line 3; Page 19, Line 19 – Page 20, Line 19).

The citations listed above with respect to independent Claim 1 are also applicable to independent Claims 18-19 and 42, which are directed to a method, computer system, and software, respectively.

As another example, independent Claim 22 recites the following:

A method for providing to a remote client machine a service to train a Neugent, comprising:

receiving a train request from the remote client machine through a computer network, the train request associated with training data for training the Neugent, the Neugent being distinct from the remote client machine (e.g., Figures 1A and 2B; Page 4, Lines 10-13; Page 5, Lines 6-7; Page 8, Lines 19-22; Page 9, Lines 20-25; Page 14, Lines 9-16; Page 14, Line 21 – Page 15, Line 25);

forwarding the train request to the Neugent to invoke training of the Neugent, training of the Neugent comprising causing the Neugent to perform a data analysis of the training data (e.g., Figures 1A and 2B; Page 4, Lines 13-18; Page 5, Lines 7-9; Page 9, Line 25 – Page 10, Line 2; Page 10, Line 5 – Page 13, Line 13; Page 14, Lines 9-16; Page 14, Line 21 – Page 15, Line 25; Page 16, Line 1 – Page 16, Line 14; Page 17, Lines 4-17; Page 17, Line 18 – Page 19, Line 18); and

forwarding to the remote client machine through the computer network a training result object returned by the Neugent, the training result object comprising a data classification mechanism operable to facilitate performance of a predictive analysis by the Neugent (e.g., .Figures 1A and 2B; Page 4, Lines 18-20; Page 5, Lines 9-10; Page 10, Line 2 – Page 11, Line 16; Page 11, Line 17 – Page 13, Line 13; Page 14, Lines 9-16; Page 21, Line 21 – Page 15, Line 7; Page 15, Lines 21-25; Page 16, Line 15 – Page 19, Line 18).

The citations listed above with respect to independent Claim 22 are also applicable to independent Claims 23 and 43, which are directed to a computer system and software, respectively.

Grounds of Rejection to be Reviewed on Appeal

1. Do Claims 1-19, 22-23, and 26-43 recite patentable subject matter under 35 U.S.C. § 101?

2. Do Claims 1-19, 22-23, and 26-43 comply with 35 U.S.C. § 112, first paragraph?

3. Are Claims 1-19, 22-23, and 26-43 patentable under 35 U.S.C. § 102(b) over "Neugents Are on The Loose," The E-Business Adviser, April/May 2000, pp. 1, 8. (the "*Neugents Article*")?

Argument

The rejection of Claims 1-19, 22-23, and 26-43 under 35 U.S.C. § 101 as being directed to non-statutory subject matter is improper and should be reversed by the Board. The rejection of Claims 1-19, 22-23, and 26-43 under 35 U.S.C. § 112, first paragraph, is improper and should be reversed by the Board. The rejection of Claims 1-19, 22-23, and 26-43 under 35 U.S.C. § 102(b) as being unpatentable over the *Neugents Article* is improper and should be reversed by the Board.

I. The Prosecution of this Application

Appellants first comment on the prosecution of this Application. Appellants filed a Request for Continued Examiner (RCE) on December 27, 2005, along with an accompanying substantive Response to the outstanding rejections. Appellants note the Examiner's failure in the Office Action mailed March 9, 2006 (mailed in response to the RCE) to respond to Appellants' arguments presented in the Response Accompanying the RCE (other than to add references to "training requests" throughout the Examiner's argument). Appellants indicated this failure in response to the March 9, 2006 Office Action. In the Final Office Action, the Examiner responded to this assertion by Appellants with the following statements:

> The claims were under RCE and were not under a non-final or final rejection. Further, the core of Applicant's arguments were addressed in the rejection. The rejections made were non-final and Applicant had [the] opportunity to comment about the non-final rejections. In this action, the Examiner makes the rejections final and addresses Applicant's arguments.

(Final Office Action, Page 37)

Appellants respectfully submit that whether the claims were under RCE, non-final rejection, or final rejection was irrelevant. Appellants filed the RCE in response to a Final Office Action mailed July 27, 2005. The RCE was not simply a cover-sheet submission but instead included a Response Accompanying RCE that included both arguments and amendments in response to the July 27, 2005 Final Office Action.

The Code of Federal Regulations states with reference to RCEs that "[i]f an applicant timely files a submission and fee set forth in § 1.17(e), the Office will withdraw the finality of any Office action and ***the submission will be entered and considered.***" 37 C.F.R. §

1.114(d) (emphasis added). Considering the submission requires that the Examiner "take note of the applicant's argument and ***answer the substance of it.***" M.P.E.P. § 707.07 (f) (emphasis added). Appellants respectfully submit that simply repeating arguments verbatim from the previous Final Office Action did not answer the substance of Appellants' arguments presented with the RCE. Appellants should not be forced to wait until the claims are placed under Final Rejection after the RCE to have those arguments and amendments that were submitted with the RCE considered and fully addressed. The substantial fee Appellants paid for an RCE should entitle Appellants to have those arguments and amendments considered and addressed in full in the first office action after RCE.

The Examiner stated that "the core of Applicants' arguments were addressed in the rejection." (Final Office Action, Page 37) Again, simply repeating arguments verbatim from the previous Final Office Action does not answer the substance of Appellants' arguments presented in the RCE. Appellants respectfully submit that Appellants should have been provided in the first non-Final Office Action after the RCE the type of response the Examiner presented in the Final Office Action, which would have given Appellants the opportunity to address the Examiner's responses prior to being under a final rejection after the RCE. Appellants recognize that the Examiner is undoubtedly responsible for the examination of a large number of applications, placing inordinate restraints on the Examiner's time; however, Appellants cannot be penalized for this fact and are still entitled to a full, complete, and efficient examination of this Application in compliance with all applicable statutes, regulations, rules, and case law.

II. Grouping of Claims

Appellants have made an effort to group claims to reduce the burden on the Board, as contemplated by 37 C.F.R. § 41.37(c)(l)(vii). Where appropriate, Appellants present arguments as to why particular claims subject to a ground of rejection are separately patentable from other claims subject to the same ground of rejection. To reduce the number of groups and thereby reduce the burden on the Board, Appellants do not argue individually every claim that recites patentable distinctions over the references cited by the Examiner, particularly in light of the clear allowability of Appellants' independent claims. The claims

of each group provided below may be deemed to stand or fall together for purposes of this Appeal.

Appellants have concluded that the claims may be grouped together as follows:

With regard to the grounds of rejection identified as issues 1 and 2 above, the claims subject to those grounds of rejection may be grouped together as follows for purposes of this Appeal:

1. Group 1 may include Claims 1-19 and 42; and
2. Group 2 may include Claim 22-23 and 43.

With regard to the ground of rejection identified as issue 3 above, the claims subject to that ground of rejection may be grouped together as follows for purposes of this Appeal:

1. Group 1 may include Claims 1-3, 13-14, 18-19, 26-27, 37-38, and 42;
2. Group 2 may include Claims 4-5 and 28-29;
3. Group 3 may include Claims 6 and 30;
4. Group 4 may include Claims 8 and 32;
5. Group 5 may include Claims 9 and 33;
6. Group 6 may include Claims 10 and 34;
7. Group 7 may include Claims 11 and 35;
8. Group 8 may include Claims 12 and 36;
9. Group 9 may include Claims 15 and 39; and
10. Group 10 may include Claims 22-23 and 43.

III. Issue 1 –Claims 1-19, 22-23, and 26-43 Recite Patentable Subject Matter

A. Overview

Claims 1-19, 22-23, and 26-43 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Appellants respectfully submit that the rejection of these claims under 35 U.S.C. § 101 is improper and should be reversed by the Board. Appellants addresses each group subject to this ground of rejection in order.

B. Standard

Patentable subject matter is "any new and useful process, machine, manufacture or composition of matter, or any new and useful improvement thereto." *See* 35 U.S.C. § 101. When an abstract idea is reduced to a practical application, the abstract idea no longer stands alone if the practical application of the abstract idea produces a useful, concrete, and tangible result. This then satisfies the requirements of 35 U.S.C. § 101. *See In re Alappat*, 33 F.3d 1526, 1544, 31 U.S.P.Q.2d 1545, 1557 (Fed. Cir. 1994); *see also State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 1373, 47 U.S.P.Q.2d 1596, 1601-02 (Fed. Cir. 1998). While an abstract idea by itself may not satisfy the requirements of 35 U.S.C. § 101, an abstract idea when practically applied to produce a useful, concrete, and tangible result satisfies 35 U.S.C. § 101. *See AT&T Corp. v. Excel Comm. Inc.*, 172 F.3d 1352, 1357, 50 U.S.P.Q. 1447, 1452 (Fed. Cir. 1999) (stating that as technology progressed, the CCPA overturned some of the earlier limiting principles regarding 35 U.S.C. § 101 and announced more expansive principles formulated with computer technology in mind); *see also In re Musgrave*, 431 F.2d 882, 167 U.S.P.Q. 280 (CCPA 1970) (cited by the Federal Circuit in *AT&T Corp.*, 172 F.3d at 1356). Thus, producing a useful, concrete, and tangible result is the key to patentability according to *State Street* and other applicable case law.

A method or process remains statutory even if some or all of the steps therein can be performed in the human mind, with the aid of the human mind, or because it may be necessary for one performing the method or process to think. *See In re Musgrave*, 431 F.2d at 893, 167 U.S.P.Q. at 289. As stated by the Federal Circuit in *State Street*, "[T]ransformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces 'a useful, concrete, and tangible result' -- a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades." *State Street*, 149 F.3d at 1373, 47 U.S.P.Q.2d at 1601-02. Each of Applicant's claims recites a useful, concrete, and tangible result, which is all the law requires for a claim to be directed to statutory subject matter, and is therefore directed to patentable subject matter.

C. Group 1 (Claims 1-19 and 42)

Claims 1-19 and 42 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Appellants respectfully submit that Claims 1-19 and 42 clearly recite statutory subject matter. Appellants discuss independent Claim 1 as an example.

Claims 1-19 and 42 are separately patentable from every other claim subject to the same ground of rejection. For example, Claims 1, 18-19, and 42 are grouped separately from Claims 22-23 and 43 for purposes of the art rejection discussed below. Moreover, Claims 1-19 and 42 recite limitations that are different than those recited in Claims 22-23 and 43.

Claim 1 is directed to a "data mining system" that comprises:

- a client machine; and
- a service broker operable to:

  receive a consultation request from the client machine through a computer network, the consultation request associated with data for consulting a Neugent, the Neugent being distinct from the client machine;

  forward the consultation request to the Neugent to invoke a consultation of the Neugent, the Neugent operable to perform a predictive analysis with respect to the data for consulting the Neugent that is associated with the consultation request; and

  forward to the client machine through the computer network a result object returned by the Neugent, the result object comprising a prediction determined by the Neugent with respect to the data for consulting the Neugent.

Claim 1 is not merely a manipulation of an abstract idea. Instead, Claim 1 clearly recites a useful, concrete, and tangible result, which is all the law requires for a claim to be directed to statutory subject matter, and is therefore directed to patentable subject matter.[2]

In particular, "forward[ing] to the client through the computer network a result object returned by the Neugent, the result object comprising a prediction determined by the

[2] Appellants note that to the extent the Examiner bases any part of this rejection on a "technological arts" requirement, the Board of Patent Appeals and Interferences, in a precedential opinion, determined that no "technological arts" requirement exists under 35 U.S.C. § 101. *See Ex Parte Lundgren*, 2004 WL 3561262, *5, Appeal No. 2003-3088 (Bd. Pat. App. & Int. 2004) (also available at http://www.uspto.gov/web/offices/dcom/bpai/prec/2003-2088.pdf) (reversing an examiner's rejection under 35 U.S.C. § 101 and stating that "[o]ur determination is that there is currently no judicially recognized separate 'technological arts' test to determine patent eligible subject matter under § 101" and "we decline to create one"). Thus, Appellants respectfully submit that a rejection based on a "technological arts" requirement is or would be improper.

Neugent with respect to the data for consulting the Neugent" is one practical application of independent Claim 1, the useful, concrete, and tangible result being the result object returned by the Neugent that is forwarded to the client through the computer network and that comprises a prediction determined by the Neugent with respect to the data for consulting the Neugent.

The Examiner's statements regarding the alleged "abstractness" of Appellants' claims seem to confuse the concept of claim breadth with the guidelines for patentable subject matter. (*See, e.g.,* Final Office Action, Pages 2, 5-6, and 37-40) The fact that Appellants' claims may be broad (e.g., that "data" is not limited to a particular type of data) does not necessarily mean that Appellants' claims are directed to non-statutory subject matter. Moreover, the Examiner's assertion that Appellants' claims are not limited to anything in the real world is simply incorrect. For example, the consultation request recited in Claim 1 is limited to a "request associated with data for consulting a Neugent." A Neugent is certainly something "in the real world," as is "data for consulting a Neugent." As another example, the result object recited in Claim 1 is limited to a "result object returned by the Neugent" and comprising "a prediction determined by the Neugent with respect to the data for consulting the Neugent." Again, a Neugent is certainly something "in the real world," as is a result object returned by such a Neugent (and comprising a prediction determined by the Neugent with respect to the data for consulting the Neugent).

Additionally, Appellants' Specification provides, for example, a discussion of certain deficiencies of some systems:

> Data mining is the analysis of large quantities of data in order to extract useful information from the data, such as for making predictions over new data (also called predictive analysis). A number of data mining products are available. However, current commercial products which allow data mining of the wealth of information on the Web require the client application to maintain a predictive model, although a service broker may collect or store raw data and forward it to the client upon demand. Since the client must maintain the predictive model, the resources of the client machine may be overwhelmed when the application is executed.

Specification, Page 2, Line 2 through Page 3, Line 6.

Additionally, with respect to certain embodiments of Appellants' invention, the Specification provides the following:

- The consultation request, according to one embodiment, includes data for consulting Neugent 13. Specification, Page 9, Lines 8-9.
- According to another embodiment, the consultation request includes identification of a source of data for consulting a Neugent 13. Specification, Page 9, Lines 12-14.
- According to another embodiment, the service broker 15 is a remote server. The consultation request from the client 11 to the remote server may include an Extensible Mark-up Language document. Specification, Page 9, Lines 17-20.
- Neugents technologies include assorted methodologies for recognizing patterns in data and for using those patterns to make predictions on new data. New data is analyzed to determine the pattern into which it falls, thereby providing a prediction of future behavior based on the behavior that has characterized the pattern in the past. Specification, Page 11, Lines 4-10.
- Consult is a process of providing new data to a Neugent (also referred to as data for consulting the Neugent) so that the Neugent uses its model, as developed during training, to provide a prediction from the new data. Specification, Page 14, Lines 17-20.

The Specification also identifies particular advantages that are realized by certain embodiments of Appellants' invention:

> Accordingly, the methodologies described in this disclosure place no burden on the client to maintain a predictive model. The complexity of client/server interfaces may be reduced by simplifying protocols and by hiding issues (for example, making them transparent to the user) of platform technology mismatches.

Specification, Page 15, Lines 2-7. Moreover, the Description of Related Art in Appellants' Specification provides at least certain example contexts for Appellants' invention. Thus, Appellants' specification asserts at least one practical application and utility of certain embodiments of Appellants' invention and identifies the advancement of the technical arts.[3]

[3] The citations to Appellants' Specification are merely examples intended to illustrate that the Specification discloses at least one practical application of certain embodiments of Appellants' invention. These citations should not be used to limit the scope of Appellants' claims to any particular embodiments.

In response to Appellants' citations to the Specification, the Examiner stated that "Applicant's claims are not in means-plus-function format, so the limitations of the Specification cannot be 'read into' the claims." (Final Office Action, Page 39) Appellants agree that the claims are not written in means-plus-function format and that it would be improper for the Examiner to read limitations from the Specification into the claims. However, to the extent that the Examiner has raised an issue regarding the utility of Appellants' claims (and the Examiner must be raising such an issue give the rejections under 35 U.S.C. § 112, first paragraph, discussed below), it is appropriate for Appellants to identify the disclosure of such a utility in the Specification (for purposes of satisfying the utility requirement and not for limiting the claims). *See* M.P.E.P. § 2107(II)

For at least these reasons, Appellants respectfully submit that independent Claim 1 and its dependent claims are directed to statutory subject matter in compliance with 35 U.S.C. § 101, and request that the Board reverse the rejection of Claim 1 and its dependent claims under 35 U.S.C § 101. For at least certain analogous reasons, Appellants respectfully submit that independent Claims 18-19 and 42 are directed to statutory subject matter in compliance with 35 U.S.C. § 101, and request that the Board reverse the rejection of Claims 18-19 and 421 and their dependent claims under 35 U.S.C § 101.

D. Group 2 (Claims 22-23 and 43)

Claims 22-23 and 43 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Appellants respectfully submit that Claims 22-23 and 43 clearly recite statutory subject matter. Appellants discuss independent Claim 22 as an example.

Claims 22-23 and 43 are separately patentable from every other claim subject to the same ground of rejection. For example, Claims 22, 23, and 43 are grouped separately from Claims 1, 18-19, and 42 for purposes of the art rejection discussed below. Moreover, Claims 22-23 and 43 recite limitations that are different than those recited in Claims 1, 18-19, and 42.

Claim 22 is directed to a "method for providing to a remote client machine a service to train a Neugent," the method comprising:

- receiving a train request from the remote client machine through a computer network, the train request associated with training data for training the Neugent, the Neugent being distinct from the remote client machine;
- forwarding the train request to the Neugent to invoke training of the Neugent, training of the Neugent comprising causing the Neugent to perform a data analysis of the training data; and
- forwarding to the remote client machine through the computer network a training result object returned by the Neugent, the training result object comprising a data classification mechanism operable to facilitate performance of a predictive analysis by the Neugent.

Claim 22 is not merely a manipulation of an abstract idea. Instead, Claim 22 clearly recites a useful, concrete, and tangible result, which is all the law requires for a claim to be directed to statutory subject matter, and is therefore directed to patentable subject matter.[4]

In particular, "forwarding to the remote client machine through the computer network a training result object returned by the Neugent, the training result object comprising a data classification mechanism operable to facilitate performance of a predictive analysis by the Neugent" is one practical application of independent Claim 22, the useful, concrete, and tangible result being the result object returned by the Neugent that is forwarded to the remote client machine through the computer network and that comprises a data classification mechanism operable to facilitate performance of a predictive analysis by the Neugent.

The Examiner's statements regarding the alleged "abstractness" of Appellants' claims seem to confuse the concept of claim breadth with the guidelines for patentable subject matter. (*See, e.g.*, Final Office Action, Pages 2, 5-6, and 37-40) The fact that Appellants' claims may be broad (e.g., that "data" is not limited to a particular type of data) does not

[4] Appellants note that to the extent the Examiner bases any part of this rejection on a "technological arts" requirement, the Board of Patent Appeals and Interferences, in a precedential opinion, determined that no "technological arts" requirement exists under 35 U.S.C. § 101. *See Ex Parte Lundgren*, 2004 WL 3561262, *5, Appeal No. 2003-3088 (Bd. Pat. App. & Int. 2004) (also available at http://www.uspto.gov/web/offices/dcom/bpai/prec/2003-2088.pdf) (reversing an examiner's rejection under 35 U.S.C. § 101 and stating that "[o]ur determination is that there is currently no judicially recognized separate 'technological arts' test to determine patent eligible subject matter under § 101" and "we decline to create one"). Thus, Appellants respectfully submit that a rejection based on a "technological arts" requirement is or would be improper.

necessarily mean that Appellants' claims are directed to non-statutory subject matter. Moreover, the Examiner's assertion that Appellants' claims are not limited to anything in the real world is simply incorrect. For example, the train request recited in Claim 22 is limited to a "request associated with training data for training a Neugent." A Neugent is certainly something "in the real world," as is "training data for training a Neugent." As another example, the training result object recited in Claim 22 is limited to a "training result object returned by the Neugent" and comprising "a data classification mechanism operable to facilitate performance of a predictive analysis by the Neugent." Again, a Neugent is certainly something "in the real world," as is a training result object returned by such a Neugent (and comprising a data classification mechanism operable to facilitate performance of a predictive analysis by the Neugent).

Additionally, Appellants' Specification provides, for example, a discussion of certain deficiencies of some systems:

> Data mining is the analysis of large quantities of data in order to extract useful information from the data, such as for making predictions over new data (also called predictive analysis). A number of data mining products are available. However, current commercial products which allow data mining of the wealth of information on the Web require the client application to maintain a predictive model, although a service broker may collect or store raw data and forward it to the client upon demand. Since the client must maintain the predictive model, the resources of the client machine may be overwhelmed when the application is executed.

Specification, Page 2, Line 2 through Page 3, Line 6.

Additionally, with respect to certain embodiments of Appellants' invention, the Specification provides the following:

- Neugents technologies include assorted methodologies for recognizing patterns in data and for using those patterns to make predictions on new data. New data is analyzed to determine the pattern into which it falls, thereby providing a prediction of future behavior based on the behavior that has characterized the pattern in the past. Specification, Page 11, Lines 4-10.
- In order for Web Services Broker 45 to invoke the train and consult methods of a Neugent 43, the structure of the XML documents calling the corresponding methods of the Neugent is precisely specified. The training and consultation API of the Neugents

preferably is rigorously defined so that they can be invoked by the WSB. Specification, Page 15, Lines 13-18.

- "Train" is a process of providing data (also referred to more specifically as training data patterns) to a Neugent 13 so that the Neugent 13 performs statistical or other data analysis of the training data patterns which provides the basis for future predictions. The output of training a Neugent 13 is a model or other data classification mechanism, which becomes the means by which the Neugent 13 recognizes patterns. Specification, Page 14, Lines 9-16.

The Specification also identifies particular advantages that are realized by certain embodiments of Appellants' invention:

> Accordingly, the methodologies described in this disclosure place no burden on the client to maintain a predictive model. The complexity of client/server interfaces may be reduced by simplifying protocols and by hiding issues (for example, making them transparent to the user) of platform technology mismatches.

Specification, Page 15, Lines 2-7. Moreover, the Description of Related Art in Appellants' Specification provides at least certain example contexts for Appellants' invention. Thus, Appellants' specification asserts at least one practical application and utility of certain embodiments of Appellants' invention and identifies the advancement of the technical arts.[5]

Appellants reiterate the comments made above regarding the appropriateness of the citations to Appellants' Specification in judging the utility of the claimed invention. *See* M.P.E.P. § 2107(II)

For at least these reasons, Appellants respectfully submit that independent Claim 22 and its dependent claims are directed to statutory subject matter in compliance with 35 U.S.C. § 101, and request that the Board reverse the rejection of Claim 22 and its dependent claims under 35 U.S.C § 101. For at least certain analogous reasons, Appellants respectfully submit that independent Claims 23 and 43 are directed to statutory subject matter in compliance with

[5] The citations to Appellants' Specification are merely examples intended to illustrate that the Specification discloses at least one practical application of certain embodiments of Appellants' invention. These citations should not be used to limit the scope of Appellants' claims to any particular embodiments.

35 U.S.C. § 101, and request that the Board reverse the rejection of Claim 23 and 43 under 35 U.S.C § 101.

IV. Issue II – Claims 1-19, 22-23, and 26-43 Comply with 35 U.S.C. § 112, First Paragraph

A. Overview

The Examiner rejects Claims 1-19, 22-23, and 26-43 under 35 U.S.C. § 112, first paragraph, because, according to the Examiner, "current case law (and accordingly, the MPEP) require such a rejection if a §101 rejection is given because when Applicant has not in fact disclosed the practical application for the invention, as a matter of law there is no way Applicants could have disclosed how to practice the undisclosed practical application." (Second Final Office Action at 7) (emphasis omitted).

B. Standard

A deficiency under the utility prong of 35 U.S.C. § 101 also creates a deficiency under 35 U.S.C. § 112, first paragraph. M.P.E.P. § 2107.01(IV); *see also In re Brana*, 51 F.3d 1560, 34 USPQ2d 1436 (Fed. Cir. 1995); *In re Jolles*, 628 F.2d 1322, 1326 n.10, 206 USPQ 885, 889 n.11 (CCPA 1980); *In re Fouche*, 439 F.2d 1237, 1243, 169 USPQ 429, 434 (CCPA 1971) ("If such compositions are in fact useless, appellant's specification cannot have taught how to use them."). Courts have also cast the 35 U.S.C. § 101 / 35 U.S.C. § 112 relationship such that 35 U.S.C. § 112 presupposes compliance with 35 U.S.C. § 101. M.P.E.P. § 2107.01(IV); *see also In re Ziegler*, 992 F.2d 1197, 1200-1201, 26 USPQ2d 1600, 1603 (Fed. Cir. 1993) ("The how to use prong of section 112 incorporates as a matter of law the requirement of 35 U.S.C. 101 that the specification disclose as a matter of fact a practical utility for the invention. ... If the application fails as a matter of fact to satisfy 35 U.S.C. § 101, then the application also fails as a matter of law to enable one of ordinary skill in the art to use the invention under 35 U.S.C. § 112."); *In re Kirk*, 376 F.2d 936, 942, 153 USPQ 48, 53 (CCPA 1967) ("Necessarily, compliance with § 112 requires a description of how to use presently useful inventions, otherwise an applicant would anomalously be required to teach how to use a useless invention."). M.P.E.P. § 2107.01(IV)

The 35 U.S.C. § 112, first paragraph, rejection should indicate that because the invention as claimed does not have utility, a person skilled in the art would not be able to use the invention as claimed, and as such, the claim is defective under 35 U.S.C. § 112, first paragraph. M.P.E.P. § 2107.01(IV). A 35 U.S.C. § 112, first paragraph, rejection based on lack of utility should not be imposed or maintained unless an appropriate basis exists for imposing a utility rejection under 35 U.S.C. § 101. *Id.* In other words, Office personnel should not impose a 35 U.S.C. § 112, first paragraph, rejection grounded on a "lack of utility" basis unless a 35 U.S.C. § 101 rejection is proper. *Id.* In particular, the factual showing needed to impose a rejection under 35 U.S.C. § 101 must be provided if a rejection under 35 U.S.C. § 112, first paragraph, is to be imposed on "lack of utility" grounds. *Id.*

C. Group 1 (Claims 1-19 and 42)

Claims 1-19 and 42 stand rejected under 35 U.S.C. § 112, first paragraph. Appellants respectfully submit that Claims 1-19 and 42 clearly comply with 35 U.S.C. § 112, first paragraph.

Claims 1-19 and 42 are separately patentable from every other claim subject to the same ground of rejection. For example, Claims 1, 18-19, and 42 are grouped separately from Claims 22-23 and 43 for purposes of the patentable subject matter rejection discussed above and the art rejection discussed below. Moreover, Claims 1-19 and 42 recite limitations that are different than those recited in Claims 22-23 and 43.

As Appellants demonstrated above, independent Claims 1, 18-19, and 42, and thus their dependent claims, recite useful, concrete, and tangible results and are directed to patentable subject matter under 35 U.S.C. § 101. Moreover, as Appellants demonstrated above, these claims satisfy the utility requirement associated with 35 U.S.C. § 101. Since the Examiner based the rejection of these claims under 35 U.S.C. § 112, first paragraph, on the rejections of these claims under 35 U.S.C. § 101, Appellants respectfully submit that the rejections under 35 U.S.C. § 112, first paragraph, must be withdrawn. In any event, Appellants respectfully submit that each of Appellants' claims complies with 35 U.S.C. § 112, first paragraph.

For at least these reasons, Appellants respectfully submit that Claims 1, 18-19, and 42, and their dependent claims, comply with 35 U.S.C. § 112, first paragraph, and request that the Board reverse the rejection of these claims under 35 U.S.C § 112, first paragraph.

D. Group 2 (Claims 22-23 and 43)

Claims 22-23 and 43 stand rejected under 35 U.S.C. § 112, first paragraph. Appellants respectfully submit that Claims 22-23 and 43 clearly comply with 35 U.S.C. § 112, first paragraph.

Claims 22-23 and 43 are separately patentable from every other claim subject to the same ground of rejection. For example, Claims 22-23 and 43 are grouped separately from Claims 1, 18-19, and 42 for purposes of the patentable subject matter rejection discussed above and the art rejection discussed below. Moreover, Claims 22-23 and 43 recite limitations that are different than those recited in Claims 1, 18-19, and 42.

As Appellants demonstrated above, independent Claims 22-23 and 43, and thus their dependent claims, recite useful, concrete, and tangible results and are directed to patentable subject matter under 35 U.S.C. § 101. Moreover, as Appellants demonstrated above, these claims satisfy the utility requirement associated with 35 U.S.C. § 101. Since the Examiner based the rejection of these claims under 35 U.S.C. § 112, first paragraph, on the rejections of these claims under 35 U.S.C. § 101, Appellants respectfully submit that the rejections under 35 U.S.C. § 112, first paragraph, must be withdrawn. In any event, Appellants respectfully submit that each of Appellants' claims complies with 35 U.S.C. § 112, first paragraph.

For at least these reasons, Appellants respectfully submit that Claims 22-23 and 43, and their dependent claims, comply with 35 U.S.C. § 112, first paragraph, and request that the Board reverse the rejection of these claims under 35 U.S.C § 112, first paragraph.

V. Issue III – Claims 1-6, 8-15, 17-19, 22-23, 26-30, 32-39, and 41-43 are Patentable over the *Neugents Article*

Claims 1-6, 8-15, 17-19, 22-23, 26-30, 32-39, and 41-43 stand rejected under 35 U.S.C. § 102(b) as being unpatentable over the *Neugents Article*. A copy of the *Neugents*

Article is attached as Appendix B. Appellants respectfully submit that the *Neugents Article* fails to support the anticipation rejections of these claims. Appellants respectfully submit that these rejections are therefore improper and should be reversed by the Board.

A. Standard for Demonstrating a Prima Facie Case of Anticipation

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987); M.P.E.P. § 2131. In addition, "[t]he identical invention must be shown in as complete detail as contained in the . . . claim." M.P.E.P. § 2131 citing *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). Furthermore, "[t]he elements must be arranged as required by the claim." *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990); M.P.E.P. § 2131.

B. The Neugents Article

The *Neugents Article* relates to network management, which according to the article includes balancing loads across the network, watching for component failure, and trying to maintain reasonable access times. (Page 1) According to the *Neugents Article*, one techniques for handling this type of management is the use of network agents – small programs that reside at network devices, send notifications to a management console, and alert managers of network problems. (Page 1)

According to the article, currently the best network agents simply notify managers of the network's condition, and let them make the decisions. (Page 1) The article states that a much smarter breed of agents is now available called neural network agents, which are software that learns the normal usage patterns of a network and notify managers proactively. (Pages 1 and 8) Thus, it is clear from the *Neugents Article* that the Neugents disclosed in the article would replace the typical agents at the network devices and communicate notifications to the network manager.

Discussing old network agents, the article states that most network agents are rule-based programs that respond to the flow of data on the network, along with other parameters.

(Page 8) Though efficient, these network agents require managers to work out step-by-step solutions for predetermined problems and configure the agents accordingly. (Page 8) The rules are cut and dried and do not allow for exceptions such as cyclical data traffic caused by holidays or year-end accounting. (Page 8)

The article states that neural network agents are different in that they are designed to automatically learn how situations arise and to program themselves. (Page 8) Over a period of week after installation, they learn the normal data flow of the network through passive study, and once they have learned the unique profile of a network, they begin to monitor in real time and make context-based alarms, automatically alerting managers when the network goes outside its normal state. (Page 8) The article states that Computer Associates is the leader of this new technology, noting that its neural network agents are referred to as Neugents. (Page 8)

According to the article, Neugents learn a network's normal range by a process called pattern recognition. (Page 8) The Neugents then create mathematic profiles of those patterns based on historical data. Once they've studied enough data, they can automatically generate forecasts of future events. (Page 8) Network agents notify managers of the status of the network and provide information to support management decision-making. (Page 8) The article predicts the next step on this path is the neural network agent, which will not only inform management of the status of the network, but also learn its normal status and make proactive predictions about its future. (Page 8)

C. Group 1 (Claims 1-3, 13-14, 18-19, 26-27, 37-38, and 42)

Claims 1-3, 13-14, 18-19, 26-27, 37-38, and 42 stand rejected under 35 U.S.C. § 102(b) as being anticipated by the *Neugents Article*. Appellants respectfully submit that these claims are clearly patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are therefore improper and should be reversed by the Board.

Claims 1-3, 13-14, 18-19, 26-27, 37-38, and 42 are separately patentable from every other claim subject to the same ground of rejection. These claims recite limitations that are substantially different from limitations recited in other claims. In addition, claims excluded

from Group 1 that are subject to the same ground of rejection and that depend on independent Claims 1 and 18, respectively, recite patentable distinctions over the cited references beyond those recited in independent Claims 1 and 18 and cannot be properly grouped with independent Claims 1 and 18 for purposes of this Appeal.

Independent Claim 1, which Appellants discuss as an example, recites:

> A data mining system comprising:
> a client machine; and
> a service broker operable to:
> receive a consultation request from the client machine through a computer network, the consultation request associated with data for consulting a Neugent, the Neugent being distinct from the client machine;
> forward the consultation request to the Neugent to invoke a consultation of the Neugent, the Neugent operable to perform a predictive analysis with respect to the data for consulting the Neugent that is associated with the consultation request; and
> forward to the client machine through the computer network a result object returned by the Neugent, the result object comprising a prediction determined by the Neugent with respect to the data for consulting the Neugent.

The *Neugents Article* fails to disclose, teach, or suggest various limitations recited in Claim 1. At a minimum, the *Neugents Article* fails to disclose, teach, or suggest a service broker that is operable to: (1) receive a consultation request from the client machine through a computer network, the consultation request associated with data for consulting a Neugent, the Neugent being distinct from the client machine; (2) forward the consultation request to the Neugent to invoke a consultation of the Neugent, the Neugent operable to perform a predictive analysis with respect to the data for consulting the Neugent that is associated with the consultation request; and (3) forward to the client machine through the computer network a result object returned by the Neugent, the result object comprising a prediction determined by the Neugent with respect to the data for consulting the Neugent, as recited in Claim 1.

For example, the *Neugents Article* fails to disclose, teach, or suggest a service broker that is operable to "receive a consultation request from the client machine through a computer network, the consultation request associated with data for consulting a Neugent, the Neugent being distinct from the client machine," as recited in Claim 1. The Examiner argues that the following statement from the *Neugents Article* discloses these limitations: One technique for

handling this type of management is the use of network agents – small programs that reside at network devices, send notifications to a management console and alert managers of network problems. (*See* Final Office Action, Page 8-9) Appellants respectfully disagree.

First, this statement from the *Neugents Article* describes old agent systems and is unrelated to neugents. Thus, it necessarily fails to disclose, teach, or suggest "receiv[ing] a consultation request from the client machine through a computer network, ***the consultation request associated with data for consulting a Neugent, the Neugent being distinct from the client machine***," as recited in Claim 1. Second, the cited portion of the *Neugents Article* clearly does not disclose, teach, or suggest any request from these network agents that is "associated with data for consulting a Neugent." Third, the neugents disclosed in the *Neugents Article* are apparently associated with the network devices and communicate to a centralized network manager. To the extent that these network devices are examples of the client machine recited in Claim 1, the neugents disclosed in the *Neugents Article* are not distinct from the network devices. Thus, the *Neugents Article* fails to disclose, teach, or suggest "the Neugent being distinct from the client machine," as recited in Claim 1.

As another example, the *Neugents Article* fails to disclose, teach, or suggest a service broker that is operable to "forward the consultation request to the Neugent to invoke a consultation of the Neugent, the Neugent operable to perform a predictive analysis with respect to the data for consulting the Neugent that is associated with the consultation request," as recited in Claim 1. The Examiner argues that the following statement from the *Neugents Article* discloses these limitations: Neugents enable companies to warehouse huge, complex data sets, intelligently process information and generate accurate predictions based on that data. (*See* Final Office Action, Page 9) Appellants respectfully disagree.

First, the cited portion of the *Neugents Article* merely discloses what neugents are. Second, nowhere does this cited portion disclose, teach, or suggest a service broker (*i.e.*, the service broker that received the consultation request from the client machine through the computer network, the consultation request associated with data for consulting a Neugent) that is operable to "forward the consultation request to the Neugent to invoke a consultation of the Neugent, the Neugent operable to perform a predictive analysis with respect to the data

for consulting the Neugent that is associated with the consultation request," as recited in Claim 1. There simply is no such service broker described in the *Neugents Article*.

As another example, the *Neugents Article* fails to disclose, teach, or suggest a service broker that is operable to "forward to the client machine through the computer network a result object returned by the Neugent, the result object comprising a prediction determined by the Neugent with respect to the data for consulting the Neugent," as recited in Claim 1. The Examiner argues that the following statement from the *Neugents Article* discloses these limitations: One technique for handling this type of management is the use of network agents – small programs that reside at network devices, send notifications to a management console and alert managers of network problems. (*See* Final Office Action, Page 9) Appellants respectfully disagree.

First, as discussed above, this statement from the *Neugents Article* describes old agent systems and is unrelated to neugents. Thus, it necessarily fails to disclose, teach, or suggest "forward[ing] to the client machine through the computer network ***a result object returned by the Neugent, the result object comprising a prediction determined by the Neugent with respect to the data for consulting the Neugent***," as recited in Claim 1. Second, the neugents disclosed in the *Neugents Article* are apparently associated with the network devices and communicate to a centralized network manager. To the extent that these network devices are examples of the client machine recited in Claim 1, the neugents disclosed in the *Neugents Article* are not distinct from the network devices. The neugents of the *Neugents Article* may perform some processing and then send notifications to the network manager. Thus, the *Neugents Article* fails to disclose, teach, or suggest "forward[ing] ***to the client machine*** through the computer network ***a result object returned by the Neugent***, the result object comprising a prediction determined by the Neugent with respect to the data for consulting the Neugent," as recited in Claim 1.

Last, Appellants note that the Examiner's citation is the exact same citation the Examiner argued allegedly discloses a service broker that is operable to "receive a consultation request from the client machine through a computer network, the consultation request associated with data for consulting a Neugent, the Neugent being distinct from the

client machine," as recited in Claim 1. Certainly, this cited portion does not disclose, teach, or suggest any service broker that both "receive[s] a consultation request from the client machine through a computer network, the consultation request associated with data for consulting a Neugent, the Neugent being distinct from the client machine" and "forward[s] to the client machine through the computer network a result object returned by the Neugent, the result object comprising a prediction determined by the Neugent with respect to the data for consulting the Neugent," as recited in Claim 1.

In response to Appellants' arguments, the Examiner identified only the following new portion from the *Neugents Article*:

> Big Networks . . . Big Problems
> AGF Brazil – a part of AGF International, an insurance company that conducts business in 34 countries – uses Unicenter TNG to manage its 800 node network throughout Brazil. The network includes Unix servers, desktops running Windows NT and 50 LANs.

(*See* Final Office Action, Pages 8 and 41-44 citing the *Neugents Article*, Page 8) The cited portion of the *Neugents Article* discloses that the company AGF Brazil has a network that includes Unix Servers, desktops running Windows NT, and 50 LANs. How this simple disclosure could possible disclose, teach, or suggest the client machine and service broker that are capable of the particular functionality recited in Claim 1 is unclear and is not explained by the Examiner. The disclosure of a network that includes a Unix server and desktops running Windows NT does not disclose, teach, or suggest the particular client machine and service broker recited in Claim 1.

For example, the *Neugents Article* does not disclose, teach, or suggest that the Unix server of AGF Brazil's network (which the Examiner apparently equates with Appellants' service broker) is operable to:

- receive a consultation request from the client machine through a computer network, the consultation request associated with data for consulting a Neugent, the Neugent being distinct from the client machine;
- forward the consultation request to the Neugent to invoke a consultation of the Neugent, the Neugent operable to perform a predictive analysis with respect to the data for consulting the Neugent that is associated with the consultation request; and
- forward to the client machine through the computer network a result

object returned by the Neugent, the result object comprising a prediction determined by the Neugent with respect to the data for consulting the Neugent.

Thus, at least because the *Neugents Article* does not disclose, teach, or suggest that the Unix Server is operable to perform the above-discussed limitations recited in Claim 1, the mere disclosure of a Unix server in the *Neugents Article* does not disclose, teach, or suggest the service broker recited in Claim 1.

For at least these reasons, the *Neugents Article* is clearly insufficient to support the Examiner's rejection of independent Claim 1 and its dependent claims under 35 U.S.C. § 102(b). For at least certain analogous reasons, the *Neugents Article* is clearly insufficient to support the Examiner's rejection of independent Claims 18-19 and 42 and their dependent claims under 35 U.S.C. § 102(b). These claims are therefore patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are improper and should be reversed by the Board.

D. Group 2 (Claims 4-5 and 28-29)

Claims 4-5 and 28-29 stand rejected under 35 U.S.C. § 102(b) as being unpatentable over the *Neugents Article*. Appellants respectfully submit that these claims are clearly patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are therefore improper and should be reversed by the Board.

Claims 4-5 and 28-29 are separately patentable from every other claim subject to the same ground of rejection. These claims recite limitations that are substantially different from limitations recited in the claims of other groups and cannot be properly grouped with the claims of other groups for purposes of this Appeal. For example, these claims recite patentable distinctions over the cited references beyond those recited in independent Claims 1 and 18.

Dependent Claims 4-5 and 28-29 depend from independent Claims 1 and 18, respectively, which Appellants have shown above to be clearly patentable over the *Neugents Article*, and are allowable for at least this reason. Furthermore, in addition to those reasons

discussed above with reference to independent Claims 1 and 18, dependent Claims 4-5 and 28-29 recite further patentable distinctions over the *Neugents Article*.

For example, dependent Claim 4 recites that "the consultation request comprises identification of a source of the data for consulting the Neugent." Dependent Claim 28 recites analogous limitations. The *Neugents Article* fails to disclose, teach, or suggest these limitations.

As allegedly disclosing these limitations, the Examiner references the following statement from the *Neugents Article*: "Neugents enable companies to warehouse huge, complex data sets, intelligently process information and generate accurate predications based on that data," said Charles B. Wang, chairman and CEO of Computer Associates. (Final Office Action, Page 11) However, nowhere does this statement disclose, teach, or suggest a consultation request [received by a service broker from a client machine], let alone a consultation request that comprises an identification of a source of the data for consulting the Neugent, as recited in Claim 4.

Dependent Claims 5 and 29 depend from Claims 4 and 28, respectively, and are allowable for at least these reasons.

For at least these reasons, the *Neugents Article* is clearly insufficient to support the Examiner's rejection of dependent Claims 4-5 and 28-29 under 35 U.S.C. § 102(b). These claims are therefore patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are improper and should be reversed by the Board.

E. Group 3 (Claims 6 and 30)

Claims 6 and 30 stand rejected under 35 U.S.C. § 102(b) as being unpatentable over the *Neugents Article*. Appellants respectfully submit that these claims are clearly patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are therefore improper and should be reversed by the Board.

Claims 6 and 30 are separately patentable from every other claim subject to the same ground of rejection. These claims recite limitations that are substantially different from limitations recited in the claims of other groups and cannot be properly grouped with the claims of other groups for purposes of this Appeal. For example, these claims recite patentable distinctions over the cited references beyond those recited in independent Claims 1 and 18.

Dependent Claims 6 and 30 depend from independent Claims 1 and 18, respectively, which Appellants have shown above to be clearly patentable over the *Neugents Article*, and are allowable for at least this reason. Furthermore, in addition to those reasons discussed above with reference to independent Claims 1 and 18, dependent Claims 6 and 30 recite further patentable distinctions over the *Neugents Article*.

For example, dependent Claim 6 recites that the service broker is operable to:

- receive a training request from the client machine, the training request comprising training data; and
- forward the training request comprising the training data to the Neugent to invoke training of the Neugent with the training data.

Dependent Claim 30 recites certain analogous limitations. The *Neugents Article* fails to disclose, teach, or suggest these limitations.

As allegedly disclosing these limitations, the Examiner references the following statement from the *Neugents Article*: Neugents learn a network's normal range by a process called pattern recognition. They create mathematic profiles of those patterns based on historical data. Once they've studied enough data, they can automatically generate forecasts of future events. (Final Office Action, Pages 11-12) However, nowhere does this statement disclose, teach, or suggest any sort of training request, let alone a service broker that is operable to "receive a training request from the client machine, the training request comprising training data," as recited in Claim 6. Moreover, nowhere does this cited portion disclose, teach, or suggest a service broker that is operable to forward any type of training request, let alone to "forward the training request comprising the training data to the Neugent to invoke training of the Neugent with the training data," as recited in Claim 6.

For at least these reasons, the *Neugents Article* is clearly insufficient to support the Examiner's rejection of dependent Claims 6 and 30 under 35 U.S.C. § 102(b). These claims are therefore patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are improper and should be reversed by the Board.

F. Group 4 (Claims 8 and 32)

Claims 8 and 32 stand rejected under 35 U.S.C. § 102(b) as being unpatentable over the *Neugents Article*. Appellants respectfully submit that these claims are clearly patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are therefore improper and should be reversed by the Board.

Claims 8 and 32 are separately patentable from every other claim subject to the same ground of rejection. These claims recite limitations that are substantially different from limitations recited in the claims of other groups and cannot be properly grouped with the claims of other groups for purposes of this Appeal. For example, these claims recite patentable distinctions over the cited references beyond those recited in independent Claims 1 and 18.

Dependent Claims 8 and 32 depend from independent Claims 1 and 18, respectively, which Appellants have shown above to be clearly patentable over the *Neugents Article*, and are allowable for at least this reason. Furthermore, in addition to those reasons discussed above with reference to independent Claims 1 and 18, dependent Claims 8 and 32 recite further patentable distinctions over the *Neugents Article*.

For example, dependent Claim 8 recites that the service broker is operable to "forward to the client machine a training result object returned by the Neugent after training of the Neugent." Dependent Claim 32 recites certain analogous limitations. The *Neugents Article* fails to disclose, teach, or suggest these limitations.

As allegedly disclosing these limitations, the Examiner references the following statement from the *Neugents Article*: Neugents learn a network's normal range by a process

called pattern recognition. They create mathematic profiles of those patterns based on historical data. Once they've studied enough data, they can automatically generate forecasts of future events. (Final Office Action, Page 12) However, nowhere does this statement disclose, teach, or suggest any sort of training result object, let alone a service broker that is operable to "forward to the client machine a training result object returned by the Neugent after training of the Neugent," as recited in dependent Claim 8.

For at least these reasons, the *Neugents Article* is clearly insufficient to support the Examiner's rejection of dependent Claims 8 and 32 under 35 U.S.C. § 102(b). These claims are therefore patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are improper and should be reversed by the Board.

G. Group 5 (Claims 9 and 33)

Claims 9 and 33 stand rejected under 35 U.S.C. § 102(b) as being unpatentable over the *Neugents Article*. Appellants respectfully submit that these claims are clearly patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are therefore improper and should be reversed by the Board.

Claims 9 and 33 are separately patentable from every other claim subject to the same ground of rejection. These claims recite limitations that are substantially different from limitations recited in the claims of other groups and cannot be properly grouped with the claims of other groups for purposes of this Appeal. For example, these claims recite patentable distinctions over the cited references beyond those recited in independent Claims 1 and 18.

Dependent Claims 9 and 33 depend from independent Claims 1 and 18, respectively, which Appellants have shown above to be clearly patentable over the *Neugents Article*, and are allowable for at least this reason. Furthermore, in addition to those reasons discussed above with reference to independent Claims 1 and 18, dependent Claims 9 and 33 recite further patentable distinctions over the *Neugents Article*.

For example, dependent Claim 9 recites that the Neugent is operable to:

- group training data patterns into clusters, each cluster corresponding to a group of similar data patterns; and
- predict a probability of membership of an input pattern to a selected group, the data associated with the consultation request comprising the input pattern.

Dependent Claim 33 recites certain analogous limitations. The *Neugents Article* fails to disclose, teach, or suggest these limitations.

As allegedly disclosing these limitations, the Examiner references the following statement from the *Neugents Article*: Neugents learn a network's normal range by a process called pattern recognition. They create mathematic profiles of those patterns based on historical data. Once they've studied enough data, they can automatically generate forecasts of future events. (Final Office Action, Pages 12-13) However, nowhere does this statement disclose, teach, or suggest the specific limitations explicitly recited in Claim 9. In particular, nowhere does this statement disclose, teach, or suggest a Neugent that is operable to "group training data patterns into clusters, each cluster corresponding to a group of similar data patterns" and "predict a probability of membership of an input pattern to a selected group, the data associated with the consultation request comprising the input pattern," as recited in Claim 9.

For at least these reasons, the *Neugents Article* is clearly insufficient to support the Examiner's rejection of dependent Claims 9 and 33 under 35 U.S.C. § 102(b). These claims are therefore patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are improper and should be reversed by the Board.

H. Group 6 (Claims 10 and 34)

Claims 10 and 34 stand rejected under 35 U.S.C. § 102(b) as being unpatentable over the *Neugents Article*. Appellants respectfully submit that these claims are clearly patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are therefore improper and should be reversed by the Board.

Claims 10 and 34 are separately patentable from every other claim subject to the same ground of rejection. These claims recite limitations that are substantially different from

limitations recited in the claims of other groups and cannot be properly grouped with the claims of other groups for purposes of this Appeal. For example, these claims recite patentable distinctions over the cited references beyond those recited in independent Claims 1 and 18.

Dependent Claims 10 and 34 depend from independent Claims 1 and 18, respectively, which Appellants have shown above to be clearly patentable over the *Neugents Article*, and are allowable for at least this reason. Furthermore, in addition to those reasons discussed above with reference to independent Claims 1 and 18, dependent Claims 10 and 34 recite further patentable distinctions over the *Neugents Article*.

For example, dependent Claim 10 recites that the Neugent is operable to:

- group training non-numeric patterns into clusters, each cluster corresponding to a group of similar non-numeric patterns; and
- predict a probability of membership of an input non-numeric pattern to a selected group, the data associated with the consultation request comprising the input non-numeric pattern.

Dependent Claim 34 recites certain analogous limitations. The *Neugents Article* fails to disclose, teach, or suggest these limitations.

As allegedly disclosing these limitations, the Examiner references the following statements from the *Neugents Article*: Neugents learn a network's normal range by a process called pattern recognition. They create mathematic profiles of those patterns based on historical data. Once they've studied enough data, they can automatically generate forecasts of future events. "Neugents enable companies to warehouse huge, complex data sets, intelligently process information and generate accurate predictions based on that data," said Charles B. Wang, chairman and CEO of Computer Associates. (Final Office Action, Pages 13-14) However, nowhere does this statement disclose, teach, or suggest the specific limitations explicitly recited in Claim 10. In particular, nowhere does this statement disclose, teach, or suggest a Neugent that is operable to "group training non-numeric patterns into clusters, each cluster corresponding to a group of similar non-numeric patterns," as recited in Claim 10. Indeed, nowhere does the cited portion even mention non-numeric patterns or clusters. Additionally, nowhere do these cited portions disclose, teach, or suggest a Neugent

that is operable to "predict a probability of membership of an input non-numeric pattern to a selected group, the data associated with the consultation request comprising the input non-numeric pattern," as recited in Claim 10.

For at least these reasons, the *Neugents Article* is clearly insufficient to support the Examiner's rejection of dependent Claims 10 and 34 under 35 U.S.C. § 102(b). These claims are therefore patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are improper and should be reversed by the Board.

I. Group 7 (Claims 11 and 35)

Claims 11 and 35 stand rejected under 35 U.S.C. § 102(b) as being unpatentable over the *Neugents Article*. Appellants respectfully submit that these claims are clearly patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are therefore improper and should be reversed by the Board.

Claims 11 and 35 are separately patentable from every other claim subject to the same ground of rejection. These claims recite limitations that are substantially different from limitations recited in the claims of other groups and cannot be properly grouped with the claims of other groups for purposes of this Appeal. For example, these claims recite patentable distinctions over the cited references beyond those recited in independent Claims 1 and 18.

Dependent Claims 11 and 35 depend from independent Claims 1 and 18, respectively, which Appellants have shown above to be clearly patentable over the *Neugents Article*, and are allowable for at least this reason. Furthermore, in addition to those reasons discussed above with reference to independent Claims 1 and 18, dependent Claims 11 and 35 recite further patentable distinctions over the *Neugents Article*.

For example, dependent Claim 11 recites that the Neugent is operable to:

- form a cluster model by grouping training data patterns into a plurality of clusters, each cluster corresponding to a group of similar data patterns and determining for each cluster probabilities of transition from the cluster to each of the other clusters; and

- predict a probability of an event occurring by applying an input pattern to the cluster model, the data associated with the consultation request comprising the input pattern.

Dependent Claim 35 recites certain analogous limitations. The *Neugents Article* fails to disclose, teach, or suggest these limitations.

As allegedly disclosing these limitations, the Examiner references the following statements from the *Neugents Article*: Neugents learn a network's normal range by a process called pattern recognition. They create mathematic profiles of those patterns based on historical data. Once they've studied enough data, they can automatically generate forecasts of future events. (Final Office Action, Pages 14-15) However, nowhere does this statement disclose, teach, or suggest the specific limitations explicitly recited in Claim 11. In particular, nowhere does this statement disclose, teach, or suggest a Neugent that is operable to "form a cluster model by grouping training data patterns into a plurality of clusters, each cluster corresponding to a group of similar data patterns and determining for each cluster probabilities of transition from the cluster to each of the other clusters," as recited in Claim 11. Additionally, nowhere do these cited portions disclose, teach, or suggest a Neugent that is operable to "predict a probability of an event occurring by applying an input pattern to the cluster model, the data associated with the consultation request comprising the input pattern," as recited in Claim 11.

For at least these reasons, the *Neugents Article* is clearly insufficient to support the Examiner's rejection of dependent Claims 11 and 35 under 35 U.S.C. § 102(b). These claims are therefore patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are improper and should be reversed by the Board.

J. Group 8 (Claims 12 and 36)

Claims 12 and 36 stand rejected under 35 U.S.C. § 102(b) as being unpatentable over the *Neugents Article*. Appellants respectfully submit that these claims are clearly patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are therefore improper and should be reversed by the Board.

Claims 12 and 36 are separately patentable from every other claim subject to the same ground of rejection. These claims recite limitations that are substantially different from limitations recited in the claims of other groups and cannot be properly grouped with the claims of other groups for purposes of this Appeal. For example, these claims recite patentable distinctions over the cited references beyond those recited in independent Claims 1 and 18.

Dependent Claims 12 and 36 depend from independent Claims 1 and 18, respectively, which Appellants have shown above to be clearly patentable over the *Neugents Article*, and are allowable for at least this reason. Furthermore, in addition to those reasons discussed above with reference to independent Claims 1 and 18, dependent Claims 12 and 36 recite further patentable distinctions over the *Neugents Article*.

For example, dependent Claim 12 recites that the Neugent is operable to:

- form an input-output model associated with a set of training data patterns; and
- predict an output value by applying the model to an input pattern, the data associated with the consultation request comprising the input pattern.

Dependent Claim 36 recites certain analogous limitations. The *Neugents Article* fails to disclose, teach, or suggest these limitations.

As allegedly disclosing these limitations, the Examiner references the following statements from the *Neugents Article*: Network agents notify managers of the status of the network and provide information to support management decision-making. The next step on this path is the neural network agent. This new technology not only informs management of the status of the network, but also learns its normal status and makes proactive predictions about its future. (Final Office Action, Page 15) However, nowhere does this statement disclose, teach, or suggest the specific limitations explicitly recited in Claim 12. In particular, nowhere does this statement disclose, teach, or suggest a Neugent that is operable to "form an input-output model associated with a set of training data patterns" and "predict an output value by applying the model to an input pattern, the data associated with the consultation request comprising the input pattern," as recited in Claim 12.

For at least these reasons, the *Neugents Article* is clearly insufficient to support the Examiner's rejection of dependent Claims 12 and 36 under 35 U.S.C. § 102(b). These claims are therefore patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are improper and should be reversed by the Board.

K. Group 9 (Claims 15 and 39)

Claims 15 and 39 stand rejected under 35 U.S.C. § 102(b) as being unpatentable over the *Neugents Article*. Appellants respectfully submit that these claims are clearly patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are therefore improper and should be reversed by the Board.

Claims 15 and 39 are separately patentable from every other claim subject to the same ground of rejection. These claims recite limitations that are substantially different from limitations recited in the claims of other groups and cannot be properly grouped with the claims of other groups for purposes of this Appeal. For example, these claims recite patentable distinctions over the cited references beyond those recited in independent Claims 1 and 18.

Dependent Claims 15 and 39 depend from independent Claims 1 and 18, respectively, which Appellants have shown above to be clearly patentable over the *Neugents Article*, and are allowable for at least this reason. Furthermore, in addition to those reasons discussed above with reference to independent Claims 1 and 18, dependent Claims 15 and 39 recite further patentable distinctions over the *Neugents Article*.

For example, dependent Claim 15 recites that the service broker comprises a remote server. Dependent Claim 39 recites certain analogous limitations. The *Neugents Article* fails to disclose, teach, or suggest these limitations.

As allegedly disclosing these limitations, the Examiner references the following statements from the *Neugents Article*: One technique for handling this type of management is the use of network agents – small programs that reside at network devices, send notifications

to a management console and alert managers of network problems. (Final Office Action, Page 17) First, this portion of the *Neugents Article* is specifically discussing old management systems as they existed prior to the introduction of Neugents. Second, nowhere does this portion even mention any type of service broker, let alone a service broker that is operable to perform the limitations recited in independent Claim 1 (from which Claim 15 depends).

For at least these reasons, the *Neugents Article* is clearly insufficient to support the Examiner's rejection of dependent Claims 15 and 39 under 35 U.S.C. § 102(b). These claims are therefore patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are improper and should be reversed by the Board.

L. Group 10 (Claims 22-23 and 43)

Claims 22-23 and 43 stand rejected under 35 U.S.C. § 102(b) as being anticipated by the *Neugents Article*. Appellants respectfully submit that these claims are clearly patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are therefore improper and should be reversed by the Board.

Claims 22-23 and 43 are separately patentable from every other claim subject to the same ground of rejection. These claims recite certain limitations that are substantially different from limitations recited in the claims of other groups and cannot be properly grouped with the claims of other groups for purposes of this Appeal.

Independent Claim 22, which Appellants discuss as an example, recites:

> A method for providing to a remote client machine a service to train a Neugent, comprising:
>
> receiving a train request from the remote client machine through a computer network, the train request associated with training data for training the Neugent, the Neugent being distinct from the remote client machine;
>
> forwarding the train request to the Neugent to invoke training of the Neugent, training of the Neugent comprising causing the Neugent to perform a data analysis of the training data; and
>
> forwarding to the remote client machine through the computer network a training result object returned by the Neugent, the training result object comprising a data classification mechanism operable to facilitate performance of a predictive analysis by the Neugent.

The *Neugents Article* fails to disclose, teach, or suggest various limitations recited in Claim 22. At a minimum, the *Neugents Article* fails to disclose, teach, or suggest a method (for providing to a remote client machine a service to train a Neugent) that comprises: (1) receiving a train request from the remote client machine through a computer network, the train request associated with training data for training the Neugent, the Neugent being distinct from the remote client machine; (2) forwarding the train request to the Neugent to invoke training of the Neugent, training of the Neugent comprising causing the Neugent to perform a data analysis of the training data; and (3) forwarding to the remote client machine through the computer network a training result object returned by the Neugent, the training result object comprising a data classification mechanism operable to facilitate performance of a predictive analysis by the Neugent, as recited in Claim 22.

For example, the *Neugents Article* fails to disclose, teach, or suggest a method that comprises "receiving a train request from the remote client machine through a computer network, the train request associated with training data for training the Neugent, the Neugent being distinct from the remote client machine," as recited in Claim 22. The Examiner argues that the following statements from the *Neugents Article* discloses these limitations: Neugents learn a network's normal range by a process called pattern recognition. They then create mathematic profiles of those patterns based on historical data. Once they've studied enough data, they can automatically generate forecasts of future events. (*See* Final Office Action, Pages 21-22) Appellants respectfully disagree.

The cited portion of the *Neugents Article* plainly does not disclose, teach, or suggest any request (let alone a train request) that is received from a remote client machine through a computer network and that is "associated with training data for training a Neugent." Indeed, the cited portion does even mention any type of request. Additionally, the neugents disclosed in the *Neugents Article* are apparently associated with the network devices and communicate to a centralized network manager. To the extent that these network devices are examples of the client machine recited in Claim 22, the neugents disclosed in the *Neugents Article* are not distinct from the network devices. Thus, the *Neugents Article* fails to disclose, teach, or suggest "the Neugent being distinct from the remote client machine," as recited in Claim 22.

As another example, the *Neugents Article* fails to disclose, teach, or suggest a method that comprises "forwarding the train request to the Neugent to invoke training of the Neugent, training of the Neugent comprising causing the Neugent to perform a data analysis of the training data," as recited in Claim 22. The Examiner argues that the following statements from the *Neugents Article* discloses these limitations: Neugents learn a network's normal range by a process called pattern recognition. They then create mathematic profiles of those patterns based on historical data. Once they've studied enough data, they can automatically generate forecasts of future events. (*See* Final Office Action, Page 22) Appellants respectfully disagree.

First, the cited portion of the *Neugents Article* merely discloses what neugents are operable to do. Second, nowhere does this cited portion disclose, teach, or suggest a method that comprises "forwarding the train request [received from the remote client machine through a computer network] to the Neugent to invoke training of the Neugent, training of the Neugent comprising causing the Neugent to perform a data analysis of the training data," as recited in Claim 22. There simply is no disclosure of such a train request or the forwarding of such a train request in the *Neugents Article*.

As another example, the *Neugents Article* fails to disclose, teach, or suggest a method that comprises "forwarding to the remote client machine through the computer network a training result object returned by the Neugent, the training result object comprising a data classification mechanism operable to facilitate performance of a predictive analysis by the Neugent," as recited in Claim 22. The Examiner argues that the following statement from the *Neugents Article* discloses these limitations: One technique for handling this type of management is the use of network agents – small programs that reside at network devices, send notifications to a management console and alert managers of network problems. (*See* Final Office Action, Page 22) Appellants respectfully disagree.

First, as discussed above, this statement from the *Neugents Article* describes old agent systems and is unrelated to neugents. Thus, it necessarily fails to disclose, teach, or suggest "forwarding to the remote client machine through the computer network ***a training result object returned by the Neugent, the training result object comprising a data classification***

mechanism operable to facilitate performance of a predictive analysis by the Neugent," as recited in Claim 22. Second, the neugents disclosed in the *Neugents Article* are apparently associated with the network devices and communicate to a centralized network manager. To the extent that these network devices are examples of the remote client machine recited in Claim 22, the neugents disclosed in the *Neugents Article* are not distinct from the network devices. The neugents of the *Neugents Article* may perform some processing and then send notifications to the network manager. Thus, the *Neugents Article* fails to disclose, teach, or suggest "forwarding ***to the remote client machine*** through the computer network ***a training result object returned by the Neugent,*** the training result object comprising a data classification mechanism operable to facilitate performance of a predictive analysis by the Neugent," as recited in Claim 22.

Last, Appellants note that the Examiner's citation (with respect to the training result object returned by the Neugent, as recited in Claim 22) is the exact same citation the Examiner argued allegedly discloses a service broker that is operable to "receive a consultation request from the client machine through a computer network, the consultation request associated with data for consulting a Neugent, the Neugent being distinct from the client machine," as recited in Claim 1 (discussed above in Group I). Certainly, this cited portion does not disclose, teach, or suggest both a service broker that both "receive[s] a consultation request from the client machine through a computer network, the consultation request associated with data for consulting a Neugent, the Neugent being distinct from the client machine" and a method that comprises "forwarding to the remote client machine through the computer network a training result object returned by the Neugent, the training result object comprising a data classification mechanism operable to facilitate performance of a predictive analysis by the Neugent," as recited in Claim 22.

For at least these reasons, the *Neugents Article* is clearly insufficient to support the Examiner's rejection of independent Claim 22 under 35 U.S.C. § 102(b). For at least certain analogous reasons, the *Neugents Article* is clearly insufficient to support the Examiner's rejection of independent Claims 23 and 43 under 35 U.S.C. § 102(b). These claims are therefore patentable over the *Neugents Article*. Appellants respectfully submit that these rejections are improper and should be reversed by the Board.

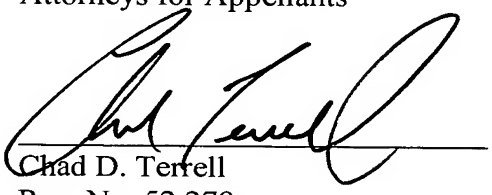
Conclusion

Appellants have demonstrated that, for at least the foregoing reasons, the present invention, as claimed, is clearly patentable over the references cited by the Examiner. Therefore, Appellants respectfully request the Board to reverse the final rejection of the Examiner and instruct the Examiner to issue a Notice of Allowance of all pending claims.

The Commissioner is hereby authorized to charge the large entity fee of $500.00 under 37 C.F.R. §§1.191(a) and 1.17(b) for filing this Appeal Brief to Deposit Account No. 02-0384 of Baker Botts L.L.P. Although no other fees are believed to be due at this time, the Commissioner is hereby authorized to charge any additional fees and/or credit any overpayments to Deposit Account No. 02-0384 of Baker Botts L.L.P. **This page is being submitted in duplicate.**

Respectfully submitted,

BAKER BOTTS L.L.P.
Attorneys for Appellants



Chad D. Terrell
Reg. No. 52,279

Date: February 26, 2007

Customer Number: **35005**

Appendix A

The Claims:

1. (Previously presented) A data mining system comprising:

a client machine; and

a service broker operable to:

receive a consultation request from the client machine through a computer network, the consultation request associated with data for consulting a Neugent, the Neugent being distinct from the client machine;

forward the consultation request to the Neugent to invoke a consultation of the Neugent, the Neugent operable to perform a predictive analysis with respect to the data for consulting the Neugent that is associated with the consultation request; and

forward to the client machine through the computer network a result object returned by the Neugent, the result object comprising a prediction determined by the Neugent with respect to the data for consulting the Neugent.

2. (Previously presented) The system of claim 1, wherein the consultation request comprises the data for consulting the Neugent.

3. (Previously presented) The system of claim 2, wherein the Neugent is operable to perform the predictive analysis of the data comprised by the consultation request.

4. (Previously presented) The system of claim 1, wherein the consultation request comprises identification of a source of the data for consulting the Neugent.

5. (Previously presented) The system of claim 4, wherein the Neugent is operable to perform the predictive analysis of input data obtained from the source identified in the consultation request.

6. (Previously presented) The system of claim 1, wherein the service broker is operable to:

receive a training request from the client machine, the training request comprising training data; and

forward the training request comprising the training data to the Neugent to invoke training of the Neugent with the training data.

7. (Previously presented) The system of claim 6, wherein the training request comprises a parameter specifying a ratio by which to split the training data between training the Neugent and testing the Neugent.

8. (Previously presented) The system of claim 6, wherein the service broker is operable to forward to the client machine a training result object returned by the Neugent after training of the Neugent.

9. (Previously presented) The system of claim 1, wherein the Neugent is operable to:

group training data patterns into clusters, each cluster corresponding to a group of similar data patterns; and

predict a probability of membership of an input pattern to a selected group, the data associated with the consultation request comprising the input pattern.

10. (Previously presented) The system of claim 1, wherein the Neugent is operable to:

group training non-numeric patterns into clusters, each cluster corresponding to a group of similar non-numeric patterns; and

predict a probability of membership of an input non-numeric pattern to a selected group, the data associated with the consultation request comprising the input non-numeric pattern.

11. (Previously presented) The system of claim 1, wherein the Neugent is operable to:

form a cluster model by grouping training data patterns into a plurality of clusters, each cluster corresponding to a group of similar data patterns and determining for each cluster probabilities of transition from the cluster to each of the other clusters; and

predict a probability of an event occurring by applying an input pattern to the cluster model, the data associated with the consultation request comprising the input pattern.

12. (Previously presented) The system of claim 1, wherein the Neugent is operable to:

form an input-output model associated with a set of training data patterns; and

predict an output value by applying the model to an input pattern, the data associated with the consultation request comprising the input pattern.

13. (Previously presented) The system of claim 1, wherein the Neugent is operable to:

form rules associated with corresponding relationships in a set of training data patterns; and

predict an outcome by applying the rules to an input pattern, the data associated with the consultation request comprising the input pattern.

14. (Previously presented) The system of claim 1, wherein the Neugent comprises a functional-link net.

15. (Previously presented) The system of claim 1, wherein the service broker comprises a remote server.

16. (Previously presented) The system of claim 15, wherein the consultation request comprises an Extended Markup Language document.

17. (Original) The system of claim 15, wherein the Neugent is server-side.

18. (Previously presented) A method for providing to a remote client machine a service to consult a Neugent, comprising:

receiving a consultation request from the remote client machine through a computer network, the consultation request associated with data for consulting the Neugent, the Neugent being distinct from the remote client machine;

forwarding the consultation request to the Neugent to invoke a consultation of the Neugent, the Neugent operable to perform a predictive analysis with respect to the data for consulting the Neugent that is associated with the consultation request; and

forwarding to the remote client machine through the computer network a result object returned by the Neugent, the result object comprising a prediction determined by the Neugent with respect to the data for consulting the Neugent.

19. (Previously presented) A computer system for providing to a remote client machine a service to consult a Neugent, comprising:

a program storage device readable by the computer system, tangibly embodying a program of instructions; and

a processor operable to execute the program instructions to:

receive a consultation request from the remote client machine through a computer network, the consultation request associated with data for consulting the Neugent, the Neugent being distinct from the remote client machine;

forward the consultation request to the Neugent to invoke a consultation of the Neugent, the Neugent operable to perform a predictive analysis with respect to the data for consulting the Neugent that is associated with the consultation request; and

forward to the remote client machine through the computer network a result object returned by the Neugent, the result object comprising a prediction determined by the Neugent with respect to the data for consulting the Neugent.

20. (Canceled)

21. (Canceled)

22. (Previously presented) A method for providing to a remote client machine a service to train a Neugent, comprising:

receiving a train request from the remote client machine through a computer network, the train request associated with training data for training the Neugent, the Neugent being distinct from the remote client machine;

forwarding the train request to the Neugent to invoke training of the Neugent, training of the Neugent comprising causing the Neugent to perform a data analysis of the training data; and

forwarding to the remote client machine through the computer network a training result object returned by the Neugent, the training result object comprising a data classification mechanism operable to facilitate performance of a predictive analysis by the Neugent.

23. (Previously presented) A computer system, comprising:

a program storage device readable by the computer system, tangibly embodying a program of instructions; and

a processor operable to execute the program instructions to:

receive a train request from the remote client machine through a computer network the train request associated with training data for training the Neugent, the Neugent being distinct from the remote client machine;

forward the train request to the Neugent to invoke training of the Neugent, training of the Neugent comprising causing the Neugent to perform a data analysis of the training data; and

forward to the remote client machine through the computer network a training result object returned by the Neugent, the training result object comprising a data classification mechanism operable to facilitate performance of a predictive analysis by the Neugent.

24. (Canceled)

25. (Canceled)

26. (Previously presented) The method of claim 18, wherein the consultation request comprises the data for consulting the Neugent.

27. (Previously presented) The method of claim 26, wherein the Neugent is operable to perform the predictive analysis of the data comprised by the consultation request.

28. (Previously presented) The method of claim 18, wherein the consultation request comprises identification of a source of the data for consulting the Neugent.

29. (Previously presented) The method of claim 28, wherein the Neugent is operable to perform the predictive analysis of input data obtained from the source identified in the consultation request.

30. (Previously presented) The method of claim 18, comprising:

receiving a training request from the remote client machine, the training request comprising training data; and

forwarding the training request comprising the training data to the Neugent to invoke training of the Neugent with the training data.

31. (Previously presented) The method of claim 30, wherein the training request comprises a parameter specifying a ratio by which to split the training data between training the Neugent and testing the Neugent.

32. (Previously presented) The method of claim 30, comprising forwarding to the remote client machine a training result object returned by the Neugent after training of the Neugent.

33. (Previously presented) The method of claim 18, comprising:

grouping, at the Neugent training data patterns into clusters, each cluster corresponding to a group of similar data patterns; and

predicting, at the Neugent, a probability of membership of an input pattern to a selected group, the data associated with the consultation request comprising the input pattern.

34. (Previously presented) The method of claim 18, comprising:

grouping, at the Neugent, training non-numeric patterns into clusters, each cluster corresponding to a group of similar non-numeric patterns; and

predicting, at the Neugent, a probability of membership of an input non-numeric pattern to a selected group, the data associated with the consultation request comprising the input non-numeric pattern.

35. (Previously presented) The method of claim 18, comprising:

forming, at the Neugent, a cluster model by grouping training data patterns into a plurality of clusters, each cluster corresponding to a group of similar data patterns and determining for each cluster probabilities of transition from the cluster to each of the other clusters; and

predicting, at the Neugent, a probability of an event occurring by applying an input pattern to the cluster model, the data associated with the consultation request comprising the input pattern.

36. (Previously presented) The method of claim 18, comprising:

forming, at the Neugent, an input-output model associated with a set of training data patterns; and

predicting, at the Neugent, an output value by applying the model to an input pattern, the data associated with the consultation request comprising the input pattern.

37. (Previously presented) The method of claim 18, comprising:

forming, at the Neugent, rules associated with corresponding relationships in a set of training data patterns; and

predicting, at the Neugent, an outcome by applying the rules to an input pattern, the data associated with the consultation request comprising the input pattern.

38. (Previously presented) The method of claim 18, wherein the Neugent comprises a functional-link net.

39. (Previously presented) The method of claim 18, wherein the method is performed at a remote server.

40. (Previously presented) The method of claim 39, wherein the consultation request comprises an Extended Markup Language document.

41. (Previously presented) The method of claim 39, wherein the Neugent is server-side.

42. (Previously presented) Software for providing to a remote client machine a service to consult a Neugent, the software being embodied in a computer-readable medium and when executed operable to:

receive a consultation request from the remote client machine through a computer network, the consultation request associated with data for consulting the Neugent, the Neugent being distinct from the remote client machine;

forward the consultation request to the Neugent to invoke a consultation of the Neugent, the Neugent operable to perform a predictive analysis with respect to the data for consulting the Neugent that is associated with the consultation request; and

forward to the remote client machine through the computer network a result object returned by the Neugent, the result object comprising a prediction determined by the Neugent with respect to the data for consulting the Neugent.

43. (Previously presented) Software for providing to a remote client machine a service to train a Neugent, the software being embodied in a computer-readable medium and when executed operable to:

receive a train request from the remote client machine through a computer network the train request associated with training data for training the Neugent, the Neugent being distinct from the remote client machine;

forward the train request to the Neugent to invoke training of the Neugent, training of the Neugent comprising causing the Neugent to perform a data analysis of the training data; and

forward to the remote client machine through the computer network a training result object returned by the Neugent, the training result object comprising a data classification mechanism operable to facilitate performance of a predictive analysis by the Neugent.

Appendix B

"Neugents Are on the Loose," The E-Business Advisor, April/May 2000.

THE E-BUSINESS ADVISER

Vol. 3 No. 4 April/May 2000

Neugents Are On The Loose

Network management is a complex business. Balancing loads across the network, watching for component failure and trying to maintain reasonable access times are a few of the many network challenges IT managers face.

One technique for handling this type of management is the use of network agents — small programs that reside at network devices, send notifications to a management console and alert managers of network problems.

Currently, the best network agents simply notify managers of the network's condition, and let them make the decisions. But, a much smarter breed of

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The E-Business Adviser
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Lights, Camera ... Server

Streaming media servers are optimized to deliver high-quality video to the desktop.

The days of static Web pages that feature only text and still images are waning. Communicating across the Internet, intranets and extranets today demands the latest features, and advances in streaming media have been the focus of a lot of attention.

The technology for utilizing streaming media is available to anyone — from the Web hobbyist to the largest enterprise. However, the quality and performance of streaming media depends largely on the server hardware and software that deliver them. These demands have created the need for specialized servers — called video servers or media servers — to deliver clear, smooth video images.

The delivery of entertainment is a high-profile use of streaming media, but the technology has applications for the enterprise in many areas, including sales and product presentations, distance learning, customer service and workgroup collaboration.

"Streaming media use has almost doubled from 1998 to 1999 with 17 percent of U.S. businesses using it for various applications in 1999, up from 9 percent in 1998," said Sujata Ramnarayan, senior analyst at GartnerGroup's Dataquest.

Moving Pictures

Web pages are basically static elements with no time component to them. When a browser requests a specific command, link or image from a Web server, the server can access and present the file without much concern for timely delivery — most Web surfers don't notice sub-second delays.

Video files are much larger and must be delivered in a continuous, uninterrupted stream. Thus, video server solutions are not inherently different than file servers or application servers — just bigger, faster and capable of handling more traffic.

Some of the decisions about choosing a video server depend on the format of the video. MPEG1 and MPEG2 are common formats, as are the three most popular client side formats — Apple QuickTime, Microsoft Windows Media and RealNetworks RealSystem G2.

Video must be compressed in a process called encoding to prepare it for transmission across networks. Encoding removes data bits from the image stream to reduce overall size — speed is gained but clarity is lost. The trade-off depends on the bit rate at which the video stream is encoded. For example, a fast-action product demon-

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EMTEC Installs Campus Network

Network provides Internet access in dorm rooms and instant communication between faculty and students at Sacred Heart University.

EMTEC, Inc., a full-service systems integrator, completed the design and implementation of a network infrastructure for Fairfield, Conn.-based Sacred Heart University, allowing students to have Internet access in virtually every area of its new East Hall dormitory.

In an effort to promote increased productivity, communication and better time management, the university enforces a laptop requirement for every student, and has invested in implementing a network infrastructure so students have easy and convenient access to e-mail and the Internet.

"Sacred Heart University is clearly taking a leadership position when it comes to promoting a paperless campus environment by deploying technology and truly embracing the use of electronic communication among its students and faculty," said Matt Lesser, EMTEC's vice president, Norwalk division.

"Our expertise in network design and management, and our ability to deploy Y2K compliance technology fulfilled Sacred Heart University's need for building a new network infrastructure," continued Lesser. "We are excited to

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FEATURES

EMTEC Installs Campus Network

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have partnered with an education institution of this caliber. While other universities talk about the technology revolution, Sacred Heart has taken real action to improve the experience of its students and faculty."

The new 10-story dormitory, occupied by approximately 700 students, required cutting-edge technology, which allows students to complete course work and research electronically from the convenience of their dorm rooms, the dorm kitchen and all of the common areas including the study halls.

The two-month project, which started with a contract for the design and implementation of the new network, led to the opportunity to employ Y2K compliance technology for all of the university's networks. EMTEC upgraded switches in the SHU data center to the newest software version so they would be compatible with new switches EMTEC installed in the East Hall dormitory.

"EMTEC proved to be a company committed to quality and professionalism," said Mike Giaquinto, Sacred Heart University's director for facilities. "One of the biggest challenges EMTEC faced was keeping the expensive, delicate, electronic equipment they installed protected from the very dusty and hot environment they were working in. EMTEC's team was extremely cautious, taking extra measures to ensure a smooth and successful implementation. With the success of its network installation, EMTEC was asked to extend its contract and continue managing the new network infrastructure it had built."

EMTEC is a full-service systems integrator headquartered in Mt. Laurel, N.J. with branches in Atlanta, Ga., Cranford, N.J., Norwalk, CT. and Mt. Laurel, N.J.

EMTEC offers a broad variety of e-business consulting services and is authorized by Sun Microsystems, Cisco, Novell, IBM, Compaq, Hewlett-Packard, Apple, 3Com and many other leading manufacturers. EMTEC can be found on the web at www.emtecinc.com.

Zaplet Technology Brings A New Twist to E-mail

E-mail has a new face and a new attitude. FireDrop is promising to change the way we use e-mail by turning static e-mail messages into dynamic documents that can be updated remotely and shared among multiple recipients.

They're called Zaplets, and these mini-applications enable users to share schedules, contacts and pictures; conduct transactions and survey polls; and communicate by turning your inbox into an interactive community. There are no Web sites to log on to and no passwords to remember. And best of all, it's free.

If you have e-mail and a browser, you can send or participate in Zaplet. No special software is required; however, Zaplets prefer hypertext markup language (HTML)-friendly e-mail clients.

Centered on server-based asynchronous communications, Zaplet technology is but one of FireDrop's suite of more than a dozen patents. Residing on top of e-mail, a Zaplet e-mail will look and act much the same as a traditional e-mail until it is opened. After it is opened, a Zaplet looks and behaves more like the Web, with interactive capabilities and graphics.

Zaplets can be shared by many people, and as people respond, the Zaplet is automatically updated with all kinds of information — ranging from discussions to current news, weather and stock information. If you wanted to get the opinion of your colleagues on the color of the new press kits, you could send out a poll and as each person responds, the original message would be updated.

The Zaplet communications platform leverages the benefits of the Web, e-mail and messaging, combining static and dynamic content. The static content is downloaded upon receipt just as it is with regular e-mail. The dynamic content, however, is delivered from FireDrop's application servers and refreshes whenever the Zaplet is opened or responded to.

To use the service, customers must sign up at www.zaplet.com. Once you've submitted pertinent information such as name, e-mail address and zip code, you can then select from a variety of helpful Zaplets, such as scheduling a tee time, sharing pictures or creating a team forecast.

On the downside, each type of Zaplet must be sent separately — you can't send an opinion poll and a calendar in the same message.

The company has plans of releasing hundreds of Zaplets in the future. For now, enjoy the convenience of this new communication platform.

Technology News in Brief

Linux Gets Embedded

White Dwarf Linux, created by EMJ Embedded Systems, is one of a new set of operating systems based on the Linux kernel. White Dwarf was developed as an embedded OS for process controls and wireless applications, and to be embedded in Internet appliances and medical and testing equipment.

"With White Dwarf Linux, engineers can use the Internet to monitor and troubleshoot embedded controllers in the field or factory," said Jim Estill, EMJ's president.

Genetic Caching

Traditional Web caching stores frequently requested pages locally to reduce network bandwidth requirements. Now a new type of caching technology called "genetic caching" promises to reduce download times by 45 percent to 60 percent, according to its developers.

Genetic caching technology from Workfire.com, for example, takes variables like a user's modem type or browser version into account to optimize page delivery. Content that took 90 seconds to download with conventional caching might be delivered in 45 seconds using genetic caching.

Color Finder

Online retailers are unable to predict what colors customers are actually seeing on their monitors, and that can spell disaster for the Internet sales of everything from fashion to automobiles. Users who order based on screen color are often dissatisfied with the color delivered.

Imation, a global technology company specializing in image and information handling systems, has a solution. Imation Verifi queries users about their monitor types and corrects color bias accordingly.

Congress Tries Again on Worker Visas

The IT industry has been calling for more foreign IT workers, and Congress is listening. A bipartisan bill introduced this February in the Senate, if passed, would increase the number of temporary visas for professional workers by 80,000 to 195,000 per year through 2002. Introduced by Senators Spencer Abraham (R-Mich.), Bob Graham (D-Fla.), Dianne Feinstein (D-Calif.) and Orrin Hatch (R-Utah), the bill has a better chance of getting passed than last year but still faces strong opposition.

This year's bill would exempt foreigners with masters' degrees or higher earned in the U.S. from the immigration cap, and employment-based immigrants would not be subject to per-country limits if additional visas were available in other categories.

The American Electronics Association (AEA), representing more than 3,000 U.S.-based technology companies, applauded the move, saying it would allow high-tech companies to fill critical job vacancies by hiring more foreign professionals.

"What is urgently required is clear-sighted action to redress an all-too-obvious imbalance between supply and demand — between a lagging supply of high-tech workers and a surging demand for them," said William T. Archey, AEA president and CEO.

According to the Immigration Reform Coalition, the problem with hiring foreign workers isn't per-country limits or lack of applicants, but a seven-year backlog in the green card process. According to the advocacy group, the current Immigration and Naturalization Service adjustment backlog is already 962,000 cases.

"It's basic arithmetic," said Paul Donnelly, organizer of the Immigration Reform Coalition. "This proposed explosion in the H-1B visa program will force all skilled immigrants to become guest workers for at least seven years. Instead of new Americans, this legislation will create perma-temps."

The Institute of Electrical and Electronics Engineers (IEEE), which promotes the creation and development of knowledge about electrical and information technologies, is also opposed. It contends that accelerating the issuance of green cards would be more beneficial.

"There isn't a single argument that can be made for this legislation that doesn't work even better for permanent immigration," said Merrill W. Buckley Jr., president of IEEE-USA. "The IEEE-USA believes strongly in ensuring a strong high-tech workforce in the 21st century, but this bill doesn't do that."

Hackers Create More Zombies

Memories of the distributed denial of services (DDOS) attacks that occurred in February will likely be in our collective consciousness for quite a while. DDOS is used to harness the collective abilities of a host of computers to swamp the target computer by inundating it with packets of information sent over the Internet. The software that made DDOS possible has been identified, and programs were distributed that kill these attacks, but that may not be the end of the story.

According to a message posted to Packetstorm.com by a hacker identified only as "Mixter," there are DDOS programs named Fapi, Blitznet, Shaft and others that are still at large. Hackers are also changing some of the identifying characteristics of the original programs to make them undetectable to the present cleansing programs.

In the message, the hacker explains that the lax security of hosts on the Internet is the main reason this type of attack is possible.

"With only a DDOS tool in his hands, Joe Attacker can't do anything," said Mixter. "But security vulnerabilities are present on the majority of hosts on the Internet. An attacker has only to run one of the [publicly available] exploit programs, and he is granted full access to such hosts."

In his recent article "DDOS: Bringing Down the Web," Dr. Peter Trippett, chief technologist at ICSA.net, a security services provider for Internet-connected companies, stated that the fix to the problem of DDOS attacks is to filter all suspicious Internet traffic.

This filtering would determine if any "return address" on Internet traffic through a firewall or router "makes sense." If not, that traffic would be rejected. He also stated the only final solution is the widespread use of such filtering by ISPs and other organizations that route Internet traffic. This would radically reduce the number of senseless addresses, the trick behind DDOS.

Server Insurance?

All the denial of service attacks that happened in February make a good argument for insurance to cover losses that could occur due to online outages. This may sound far-fetched, but according to Hewlett-Packard, it's still possible.

In association with J.S. Wurzler and Interex, an HP user group, HP will be offering insurance coverage against losses incurred due to outside forces that limit or deny Internet service.

According to sources at Information Week, starting in May HP customers that are running systems based on HP-UX and certified by HP may be able to buy such insurance.

The insurance payoff will be based on many factors, including the customer's last five-day online business volume.

Expanding Gigabit Networks

Getting broadband service to remote company locations is becoming more and more important. The bandwidth needed for integrated services is driving existing networks beyond their capacity.

While the existing alternatives include digital subscriber lines, cable modems and direct dial-ups, a new twist is just around the corner — Ethernet. Already used on the LAN, new products will now allow Ethernet to be deployed to the WAN space as well.

Leading this development is the 10 Gigabit Ethernet Alliance, co-founded by World Wide Packets, a developer of low-cost Gigabit networking equipment for business and residential use. The alliance includes heavy hitters 3Com, Cisco, Intel, Nortel and Sun Microsystems.

World Wide Packets has developed networking equipment to take advantage of the rapidly expanding Fiber to the Subscriber (FTTS) infrastructure. Instead of using a dial-up connection or high-speed modem, the 10 Gigabit Ethernet Alliance hopes to use this technology to push Ethernet protocols to the edge of the network.

"'Ethernet Everywhere' seems to be the networking mantra wherever I go," said Jonathan Thatcher, director of engineering and chairman of the IEEE 802.3 High Speed Study Group (10 Gigabit Ethernet). "Ethernet is being deployed in the local-area network today. With 10 Gigabit Ethernet, we will see Ethernet aggressively deployed in the WAN."

"Emerging, bandwidth-intensive applications require speeds of at least 100Mbps or higher," said Bernard Daines, president and CEO of World Wide Packets. "Gigabit Ethernet, therefore, is the ideal aggregation technology."

Lights, Camera ... Server

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stration may require the use of MPEG2's higher image quality at a bit rate of 3Mbps, while a training video might be encoded at MPEG1 at 1.5Mbps.

The encoding rate and the number of desired content streams have a tremendous impact on the choice of video server in terms of performance, storage and networking requirements.

While the processor performance of a video server is important to the delivery of video streams, the more important factor is input/output (I/O) performance. The complex computations of traditional servers are not required in a video scenario — videos have a need for I/O speed.

Streaming video requires high-speed processing of requests from storage and delivery to the network. Numerous high-performance I/O channels, each with an independence from other channels to enable multiple streams, are desired in a server.

Storage is perhaps the most pressing issue when attempting to deliver streaming content. Any attempt to supply a significant number of video streams will require the use of a redundant array of independent disks (RAID) storage system, not only to store the massive amount of data produced by video encoding, but also to ensure its timely delivery. RAID storage systems must be carefully chosen and configured.

Video content managers must select storage capacity based on the number and size of streams required to serve the business function. Whether or not video archives will be offered to end-users will also impact storage choices.

Network performance of a video server depends largely on the amount of bandwidth allocated to the server and the server's throughput capabilities. This, in turn, impacts the number of video streams that can be supported.

On the Soft Side

Because of the extraordinary dependence on hardware to deliver quality video, video server software is often closely matched to the server. The software must, of course, support the common video formats, but should also be able to deliver video at a variety of bit rates to accommodate the client's playback capabilities. Support for Internet Protocol and Asynchronous Transfer Mode are standard client/server features.

Media management tools should also be included in the video server package to organize, manage and track the usage of video assets. Web-based performance monitoring tools can also help video content managers pinpoint bottlenecks, while authorization tools can issue permissions based on end-user profiles.

The decision to employ streaming video technologies in an enterprise setting requires a commitment to build a solution that can provide reliable delivery of video to end-users — it must perform like a TV/VCR or else it won't be used. Although issues like bandwidth and network configuration are critical, the selection of video server hardware and software is the key to a video solution that offers return on investment.

Video Servers Caching In

One of the issues hampering the widespread use of streaming video in enterprise settings has been the unpredictable nature of demand for content.

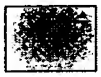
"Streaming media delivery is problematic today because when multiple end-users wish to access the same content, they each receive a stream from the origin server resulting in unnecessary congestion of both the server and the network.

"The principles of network caching — used to ensure the availability of mission-critical data — are now being used to deliver streaming content. Networking vendors are introducing caching products that deliver content to the edge of the network near the end-users — alleviating the demands on the origin server and the network.

"Network Appliance, a provider of dedicated Internet infrastructure appliances, recently announced availability of its NetCache 4.1 streaming media appliance for distributing high-quality streaming media. The appliance supports all three major streaming formats — Apple QuickTime, Microsoft Windows Media and RealNetworks RealSystem G2.

"Live Webcasts and on-demand streaming video and audio will become as common as television and radio broadcasts in the near future, especially as today's technology infrastructure to support widespread streaming media becomes broadly deployed," said Amit Pandey, director of NetCache marketing for Network Appliance. "Our streaming media appliance is designed to help alleviate the delivery problems that plague streaming media today and make broadcast quality streaming media a reality in corporate and service provider's networks."

Caching works by installing an appliance that stores frequently requested information closer to the end-user — typically at a point of presence node. The result is more efficient delivery and use of bandwidth.



Touched by An Angel?

E-tailers who are losing online customers due to computer glitches can now get help from angels.

This isn't about divine intervention. SiteAngel 2000 is a Web-based service that simulates the customer experience from outside the firewall. Companies teach "angels" what to monitor by clicking through a Web site's mission-critical pages and setting performance and availability goals for each path. Angels then test the Web site against the defined goals on a regular basis.

"SiteAngel 2000 detects all functionality errors that can lead to customer frustration, shopping cart abandonment and Web site crashes," said Rob Neville, co-founder and co-CEO of Evity, the developer of Site-Angel 2000. "With online sales quickly on the rise, SiteAngel 2000 will equip e-commerce companies with the information they need to detect tremors before the earthquake."

CartSmarts Advantage

ShopLink.com, an online provider of grocery shopping and household services, has licensed net.Genesis' CartSmarts software to better understand online visitor behavior in the context of the online shopping cart environment.

CartSmarts identifies online shopping habits, such as abandoned shopping carts and participation in promotions, and distinguishes between browsers and prospective, first-time and repeat buyers. This analysis enables e-businesses to develop and deliver more tailored e-commerce programs and marketing and e-mail campaigns.

"With this added intelligence, we can better serve our customers," said Michael Lenart, Shoplink.com's director of technology and architecture. "It also gives us the ability to cross-sell, up-sell and even encourage impulse purchases — something that, until now, has been impossible on the Web."

Web Log Analysis Boosts E-business

Web log analysis software reports traffic information from your Web site and can also be used for marketing and research reports.

Knowing your customer is the first rule of successful e-business. Without this knowledge, posting new items and features on your site is like shooting in the dark.

"Unlike the brick-and-mortar world, in e-business, the challenge always exists to identify your invisible customer and his or her needs," said Bonnie Brooks, principal analyst for Creative Strategies.

Fortunately, a variety of Web log analysis tools are now available to aid businesses in learning who their customers are.

A No-frills Approach

Simply put, Web log analysis software reviews Web server log files to report traffic information. The analysis is used primarily to assess what is happening on a Web site.

Webmasters and system administrators find this information helpful for the management of the Web site. They look at how much traffic the site is getting, how many requests succeed or fail, and what kinds of errors are generated.

For Web marketers, Web log analysis is becoming an invaluable tool in assessing the success of a site. By adding information such as advertisement names, filters and virtual server information, log data can be used to track the results of specific marketing campaigns.

Product managers and marketers require this information to accurately monitor which companies are visiting the site, what pages are the most (or least) popular, from what sites are visitors coming and how much bandwidth the site is using.

"With several robust Web sites, including www.mapinfo.com, testdrive.mapinfo.com and reportzone.com, we have a great need for e-customer intelligence that can help shape our marketing efforts and improve the customers' experience," said Kim Seabury, manager of Web Operations. "With [Web log analysis software], we can identify exactly where our customers are coming from and what they value most when they visit."

Forewarned Is Forearmed

Armed with this information, an organization can reward referring sites or discontinue a banner ad on a site that is generating few customers — or few qualified leads. Such information enables a manager to efficiently allocate budgets for different site initiatives.

But it doesn't stop there. The next level of Web analysis products help facilitate Web mining — the mingling of Web analysis data and your corporate database. By combining your Web log analysis with your sales, customer information or internal human resources databases, you can produce highly detailed reports that can be valuable in devising a market strategy for your site.

For instance, Web mining can help you assess how visitor demographic and psychographic information correlates with Web site browsing behavior. It can tell you which advertising banners are bringing the most potential buyers to your site and which sites refer the highest number of visitors who actually purchase. It also can help define a Web site's return on investment (ROI).

> "Unlike the brick-and-mortar world, in e-business, the challenge always exists to identify your invisible customer and his or her needs."

"As the competitive landscape becomes more congested, e-businesses must understand their e-customers in order to gain a competitive edge," said Larry Bohn, president and CEO of net.Genesis, a provider of e-commerce intelligence software.

And the Vendors Are ...

According to a recent report by International Data Corp., the Web traffic analysis market will reach $100 million by 2002. Among the software vendors in this market are Accrue Software, WebTrends, Marketwave, NetIntellect and Monocle Solutions.

One of the top-selling solutions is WebTrends Log Analyzer, a Web traffic analyzer that can produce more than 70 comprehensive and customizable reports on your Web site's effectiveness. It highlights such points as overall trends, bandwidth usage, market share, advertising ROI, visitor paths and user demographics.

Monocle Solutions' WebLog Manager Pro logs standard information — such as browser type, referring uniform resource locator (URL), Internet Protocol address and host — as well as how often a visitor returns, how long a visitor stays on-site and what click path is taken on-site. Additionally, site management features are included, such as capturing missing or bad links automatically and steering visitors to a professional "error" page along with an apology and/or index to relevant topics.

Other WebLog Manager Pro features show how often a particular visitor returns (done automatically via cookies), what search engines spidered your site, how many Web site pages your visitor viewed and how long your visitor stayed on your site. This software also monitors the user's click paths on the site.

Accrue Software's Accrue Insight can perform Web log analysis for a number of different sites simultaneously. This solution collects Web visitor information from any combination of servers deployed worldwide that may receive millions of hits daily. Web visitor activity is collected, analyzed and stored in one main data warehouse.

Making Sense Of the Results

With this information, your marketing managers, merchandising managers and business analysts can perform in-depth analyses and produce comprehensive reports on the effectiveness of your Web initiatives. These reports bring all the data into one view, showing overarching trends of specific segments of visitors and customers, and measuring advertising and marketing campaign effectiveness.

These reports can be customized for different business functions — such as marketing, advertising, publishing, customer support, sales or order processing — and can be compiled daily to show trends over weeks or months.

Out-analyze the Competition

Clearly, it isn't sufficient to simply put up an e-commerce site — you must know what is happening on that site and who is visiting it.

"E-businesses can no longer afford to underestimate the necessity of customer intelligence," said Wayne Eckerson, senior consultant with Patricia Seybold Group.

Web log analysis software helps online businesses get the detailed analysis of site traffic and customer habits they need to make informed e-commerce decisions. Given the high stakes involved in e-commerce, it's almost a foregone conclusion that your competition is already using this software. Those who hesitate to utilize these tools may lose the battle for online business.

Computers May Not Have Hearts, But They Have Immune Systems

IBM Software and Symantec have donned their lab coats and stethoscopes to fight a longtime adversary — the computer virus. These companies are attempting an innovative approach to computer security by borrowing concepts from immunology. Aiming to create a digital immune system for computers, the companies hope to eradicate viruses and thwart hacker attacks before they inflict significant damage.

The Melissa virus caused an estimated $400 million in damage in the U.S. alone last year. Recent attacks on high-volume Web sites, such as Yahoo! and eBay, have heightened interest in security. Businesses around the world spent $12.1 billion last year in a war against "economic terrorism" in the form of malicious computer viruses, according to a study by Computer Economics, a computer consulting firm. The virtual world demands impenetrable protection, and conventional methods don't always measure up.

Stephanie Forrest of the University of New Mexico and Alan Perelson of the Los Alamos National Laboratory in New Mexico first formally introduced the notion of digital immune systems in 1992 — however, only in theoretical terms. IBM and Symantec are bringing Forrest and Perelson's innovative work to fruition with a commercial antivirus package based on the immune system.

The theory behind digital immune systems is quite different from standard security solutions, such as antivirus software. Antivirus software is much like an alarm system. It alerts you when an intrusion occurs, but relies on human operators to fix the problem. By the time the message is sent and a human responds, a virus could spread throughout an entire network, causing devastating financial damage and proprietary information compromises.

The digital immune system bypasses the human operator and, after identifying a suspect file, immediately sends it to a central location for analysis. The suspect file is dissected and prompted to infect an isolated network of PCs. Then the virus is observed in action. From this, analysts can develop a signature to identify the virus in the future, as well as an antidote to counteract it. After the signature and antidote are tested on the original suspect file and on the copies used to trigger the virus, they are sent back to the PC that first reported the problem.

This all works smoothly, at least in prototype form. IBM is cautiously introducing the concept one step at time. Several large firms are participating in a slightly modified trial run of the product. Instead of suspect files going directly to the analysis center, they are first channeled to a systems administrator who determines whether to send the files on. In time, the need for participation by the systems administrator will be eliminated.

"This is the first step toward a comprehensive system that can spread a global cure for a virus faster than the virus itself can spread," said Steve R. White, senior manager of antivirus research at IBM's Watson Research Center in Hawthorne, NY. "This partnership is yielding incredible antivirus technologies that will protect our customers and raise the bar for the industry as a whole."

But just as microorganisms evolve at lightening speed in the face of extinction, so too shall computer viruses. It is the intent of digital immune systems to keep pace with these changes in a similar fashion to the way the human immune system works.

DNA Computing: More Fact than Fiction

The idea of the "DNA computer," may not be as far-fetched as once imagined. A group of scientists from the University of Wisconsin-Madison have come a step closer to harnessing the potential of DNA by creating a short-lived chemical computer from strands of synthetic DNA. The computer serves no practical application, and demonstrates that DNA computing must be simplified before it can be scaled up to address complex problems routinely handled by conventional computers.

However, scientists hope DNA computing will surpass the limits of traditional computers driven by computer chips, as this technology will soon reach the limits of miniaturization. DNA is capable of storing enormous amounts of information and can perform tasks similar to computers by releasing enzymes that act as software.

DNA is appealing from a technological standpoint due to its ability to store more information than any existing conventional computer chip. Estimates indicate that a gram of dried DNA can hold as much information as a trillion CDs. According to university reports, in a biochemical reaction taking place in a tiny surface area, hundreds of trillions of DNA molecules can operate in unison, creating a parallel processing system that operates similar to that of the most powerful supercomputer.

Though DNA computers won't be filling offices and homes any time soon, the ground has certainly been broken in preparation for an improved and simpler chemistry for DNA computing.

Wireless Gets A Jolt of Java

Sun Microsystems is working with industry partners to create a common standard for wireless technologies using the Java 2 platform. Since its introduction last year, more than a dozen wireless industry manufacturers and service providers have licensed the Java 2 Platform Micro Edition to integrate into mobile phones, two-way pagers and other wireless information devices. Aimed at both the consumer and embedded market, Java 2 platform supporters hope it will become the common wireless standard.

Untethered E-commerce

Verisign is leading the way to e-commerce over the wireless Internet. With a suite of new technologies, services and key industry alliances, Verisign hopes to gain a stronghold in what analysts are predicting to be an explosive growth market. This innovative suite of products is specifically tailored to the unique architecture of the wireless Internet and provides the same level of trust for the wireless and wired Internet.

More Surfers Go Wireless

According to a recent report by International Data Corp. (IDC), more than seven million users logged on to the Internet with wireless devices in 1999. IDC anticipates that within the next few years, the majority of Internet access could be through wireless means.

A steady rise is expected in the number of users accessing the Internet with wireless devices, but IDC believes users' lack of understanding is thwarting interest. The report looks at the current interest in wireless Internet access and examines interfaces, platforms, devices and services used.

Warring Over Wireless Standards

The fight for common ground has incited a flurry of activity in the wireless market.

Wireless technology is primed to shine in 2000. The opportunity for tremendous growth in the wireless marketplace has, however, sparked an all-out war over wireless standards.

While the competition will undoubtedly result in improved products, end-users still need to have an understanding of the standards to ensure that they select the best wireless device for their needs.

Wireless Cheering Squad

Standards are created in order to provide a common specification to software and hardware vendors so they can then build compatible equipment. Wireless protocols such as Bluetooth, Wireless Application Protocol (WAP) and Global Systems for Mobile Communication (GSM) 3G (Third Generation), are vying for market share. Each is supported by alliances working as protocol cheerleaders, spurring their teams on to victory.

And their enthusiasm has spread. In the past, wireless technology failed to live up to expectations and, consequently, failed to permeate the communications world. Now, mobile devices such as PalmPilots and smart phones have sparked a widespread resurgence of wireless technology.

According to a report issued by International Data Corp. (IDC), more than 111 million people subscribed to wireless services in 1998, producing almost $40 billion in revenues. The report, entitled "U.S. Wireless Services and Devices Market Assessment, 1998-2003," estimates that by 2003, there will be nearly 186 million subscribers, generating revenues of almost $69 billion.

These numbers are indicative of what supporters have argued all along — wireless devices are, or at least have the potential to be, fundamental business tools. Wireless Internet access, in particular, is pushing standards like WAP into high gear and prompting companies to jump on the wireless train before it leaves without them or their customers.

"Nearly 49 percent of business professionals say they would access the Internet wirelessly several times a day if the price and service were right," said Becky Diercks, director of wireless research, Cahners In-Stat Group.

Champion of Wireless?

WAP is an open, global specification that uses wireless markup language (WML), a version of handheld device markup language (HDML) and WMLScript, a compact language similar to JavaScript that runs in limited memory, to provide secure access to e-mail and text-based Web pages.

WAP is, in part, an updated version of HDML. WAP aims to glean the benefits of TCP/IP (Transmission Control Protocol/Internet Protocol), the global standard for communications, without the associated overhead. It is designed to work with most wireless networks and can be built on any operating system, including PalmOS, EPOC, Windows CE and JavaOS.

WAP is supported by a forum whose members represent more than 90 percent of the global handset market — carriers with more than 100 million subscribers, leading infrastructure providers, software developers and other organizations with vested interest in the wireless market.

"The WAP Forum sits at the intersection of wireless communications and the Internet and has the support of industry leaders that are focused on realizing its potential," said Jim Soriano, chief technologist for Xircom, a provider of mobile information access solutions.

Wireless Blue Blood

Bluetooth is another viable standard aiming to pick up where WAP leaves off by providing users faster hops and requiring shorter packets. Supported by the Bluetooth Special Interest Group, a consortium of computer and telecommunications companies, the Bluetooth initiative is aimed at developing a relatively open specification through either industry special interest groups or authorized standards bodies.

"We're confident that the Bluetooth technology is going to become the next major serial communication protocol," said Dan Wilnai, president of CATC. "We've expanded our technology base to support wireless communication standards and are once again leading the industry with our early commitment to the Bluetooth design community. With more than 1,300 companies worldwide having joined a group dedicated to developing and using Bluetooth, CATC will supply the best development and test tools available on the market."

Not Just in Europe

GSM is a well-established global wireless standard. Though widely deployed in Europe and throughout the world since the 1980s, GSM has had less success in the U.S. Undaunted, GSM innovators are looking ahead with GSM 3G, a third-generation mobile technology that promises to not only deliver a wide variety of wireless services, but to

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Cisco Systems Pushes for Wireless Internet Services

Cisco Systems has joined forces with 10 leading companies to push for open standards for broadband wireless Internet access services. Working to standardize the Media Access Control (MAC) and leading-edge wireless Vector Orthogonal Frequency Division Multiplexing (VOFDM) Physical Layer, the alliance promises to lower the cost of provisioning a wireless network while providing robust, cost-effective, interoperable wireless solutions.

"Cisco's goal is to bring the Internet revolution to as many people as possible, and our new wireless technology and partners will play a key role," said Don Listwin, executive vice president of Cisco Systems. "With a global team of silicon, consumer electronics and services partners, we will bring innovative new access options to our customers."

The driving force behind the coalition is the technology that delivers two-way data, voice and video communications over air to both homes and businesses, enabling high-speed services that rival today's most advanced cable networks. Proven effective in congested cities and suburban and rural areas, wireless technology overcomes line-of-sight, distance reach, subscriber coverage, installation and antenna size problems.

"This wireless breakthrough dramatically changes the global availability of broadband Internet services," said Yougsoo Ryu, executive vice president of Samsung's broadband network terminal division. "We are in favor of the broadband wireless open standards that will assist us in delivering an exciting new generation of broadband wireless technologies."

Neugents on the Loose

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agents is now available. Called neural network agents, this new software learns the normal usage patterns of a network and notifies managers proactively.

Smart Software

Most network agents are rule-based programs that respond to the flow of data on the network, along with other parameters. Though efficient, these network agents require managers to work out step-by-step solutions for predetermined problems and configure the agents accordingly. These rules are cut and dried and, for the most part, don't allow for exceptions such as cyclical data traffic caused by holidays or year-end accounting.

Neural network agents are different. They're designed to automatically learn how situations arise and program themselves. Over a period of weeks after installation, they learn the normal data flow of the network through passive study. Once they've learned the unique profile of a network, they begin to monitor in real time and make context-based alarms, automatically alerting management when the network goes outside its normal state.

The leader in this new technology is Computer Associates, a top business software company. It has developed neural network agents, called Neugents, as part of its Unicenter TNG network software solution.

Big Networks ... Big Problems

AGF Brazil — a part of AGF International, an insurance company that conducts business in 34 countries — uses Unicenter TNG to manage its 800-node network throughout Brazil. The network includes Unix servers, desktops running Windows NT and 50 LANs.

"From anywhere in Brazil our agents can submit current proposals, track them through the approval process, make endorsements and print documents," said Carlos Henriques, systems director at AGF Brazil. "In our operations center, Neugents allow us to keep important services running smoothly on a 24x7 basis without requiring high staffing levels."

"The Unicenter TNG performance Neugent gives the management staff more confidence in what it does to make things better by providing proactive support," said Fernando Peixoto, consulting analyst, AGF Brazil. "Simply put, Neugents move us away from fire-fighting mode, and that means better service for our clients."

Neugents in the Database

Neugents learn a network's normal range by a process called pattern recognition. They then create mathematic profiles of those patterns based on historical data. Once they've studied enough data, they can automatically generate forecasts of future events.

A different use for Neugents was developed for MegaTime Technologies, a leading Taiwan-based financial IT integration and development services provider, when it partnered with Computer Associates to make Neugents a part of an upgrade of Taiwan's securities industry network. MegaTime uses Neugents in its advanced securities and futures analysis systems.

"Neugents enable companies to warehouse huge, complex data sets, intelligently process information and generate accurate predictions based on that data," said Charles B. Wang, chairman and CEO of Computer Associates.

Network agents notify managers of the status of the network and provide information to support management decision-making. The next step on this path is the neural network agent. This new technology not only informs management of the status of the network, but also learns its normal status and makes proactive predictions about its future.

Prioritizing Network Traffic

Many types of data must now coexist on the company network, from system backups to streaming video presentations to e-mail. Internet protocols — the rules by which most networks live — don't recognize the relative importance of these streams. They pass data packets along the network on a first-come, first-served basis.

For many applications, this isn't a problem. E-mail and print and file services aren't very bandwidth-heavy, they can slide through with no problem. Applications like streaming video feeds aren't so forgiving.

Instead of installing new network hardware to handle the increased demand, organizations can use a new class of routing software that can give one type of data preference over another.

One such solution is Nortel's BayRS router software, which features so-called Differentiated Services (DiffServ) technology. DiffServ enables network administrators to define service levels based on applications, users or groups and allocate a percentage of bandwidth to each defined group.

Managing the traffic on a network is hard when every data stream gets the same privileges. Using a router with the ability to differentiate various data streams makes the network administrator's job easier and increases the overall efficiency of the network.

Veritas V3 Named Best

Veritas Software's V3 Storage Appliance was named "Best New Technology for 2000" at the Strategic Research Input/Output Technologies Forum and Expo held in January in Monterey, Calif.

The Veritas V3 Storage Appliance simplifies the management of multiple pools of storage area networks (SANs) and SAN-attached storage by allowing customers to consolidate critical storage management tasks onto one centralized console managing single or multiple intelligent storage servers or "appliances."

Exabyte M2 Tape Drives Linux-Ready

Exabyte's Mammoth-2 tape drives are certified to run under Linux, according to Enhanced Software Technologies (EST). EST is the sponsor and administrator of the Linux Tape Device Certification Program, which will ensure that Exabyte's products are compatible to operate under the Linux system and will perform up to Linux users' expectations of performance and reliability.

Cisco Gear Has Optical Backbone

Digital Broadband Communications is purchasing $20 million worth of next-generation optical networking gear from Cisco Systems for the next phase of its broadband network expansion, which includes the development and management of its own optical fiber backbone. This investment allows Digital Broadband more direct control of its growing network, translating to higher quality of service and greater cost-efficiencies for its customers.

Oracle, Entrust Deliver Out-of-the-Box Security

Oracle Corp. and Entrust Technologies recently announced a cooperative agreement to integrate their e-business security technologies to further strengthen Internet, business-to-business (B2B) and enterprise applications. The partnership is designed to provide customers with Oracle's highest levels of commercially available data security with out-of-the-box use of Entrust's public key infrastructure (PKI) technology.

Entrust/PKI enables trusted business-to-business electronic transactions and communications, allowing users to easily encrypt, digitally sign and authenticate electronic transactions across applications with best-in-class security, flexibility, ease of use and low cost.

The first Oracle product scheduled to be made Entrust-ready is Oracle Advanced Security, which provides advanced encryption, authentication and enterprise security management capabilities to Oracle users. Entrust plans to ensure the core components of its market-leading PKI software will run on the Oracle8i database, allowing Oracle8i customers to gain access to Entrust's security features.

Oracle Internet Directory, a scalable, enterprise-ready directory service based on the Lightweight Directory Access Protocol (LDAP) standard, is also scheduled to be certified for use with Entrust/PKI. Built on the proven data management technology of Oracle8i, Oracle Internet Directory provides customers with one of the highest levels of scalability, reliability and security. Entrust's customers are expected to be able to use Oracle Internet Directory in managing critical enterprise security information, such as certificate revocation status through Entrust's Directory Partner program.

In addition, Oracle plans to embed the Entrust.net root key certificate in multiple products, including Oracle Internet Directory, Oracle Advanced Security and Oracle Application Server, enhancing the security of its products for e-business. The companies announced that these technologies are already under development and are expected to be ready for shipment by summer 2000.

"The result of this agreement will allow customers to more efficiently manage their secure e-business relationships and enhance the speed in which they can deploy their B2B and business-to-consumer e-business initiatives by utilizing the security infrastructure provided by Oracle and Entrust," said Bob Heard, senior vice president of marketing and business development at Entrust.

Vendors Unite for Data Storage

Leading vendors from the network attached storage (NAS) and storage area network (SAN) industries have announced the first-ever NAS and SAN combined storage solution.

Legato Systems, Network Appliance, Quantum ATL Products, Spectra Logic Corp., Veritas Software and Vixel Corp. joined forces to deliver an integrated, multi-vendor solution, using products that are tested and certified for interoperability.

The application of SAN technology to provide a powerful backup and recovery solution for network appliance filers is the first of its kind and demonstrates that NAS and SAN technologies are complementary, not competitive. The integrated solution meets the demands of IT managers facing rapidly increasing amounts of storage — which, according to a recent report from International Data Corp., is increasing by 100 percent per year.

The solution is a Fibre Channel SAN-based shared tape backup system that supports network appliance filers managed by enterprise data storage software. It delivers a new level of speed and performance while protecting customer investments.

The standards-based solution addresses the demands of network storage customers seeking increased, LAN-free tape backup and sharing of tape resources. The solution's infrastructure removes the backup traffic from the LAN, eliminating the backup disruption from end-users and their applications. Connectivity dramatically increases as libraries and filers are now shared across the SAN.

Alteon Helps Prevent Web Site Attacks

Alteon WebSystems has implemented key mechanisms to help companies thwart malicious Web site attacks. These features — SYN flood protection, high-speed deep traffic filtering, global server load balancing and firewall load balancing — have become integral elements in helping companies avoid the "Denial of Service" (DoS) and "smurf" attacks plaguing many well-known Web sites.

"These Internet attacks have been constructed by highly intelligent individuals who clearly understand the technical intricacies of the Web," said Dominic Orr, president and CEO of Alteon WebSystems. "Though it is naive to think that companies can completely prevent such attacks, our technology can play a key role in helping Web site operators better architect their infrastructure against such events."

Smurf attacks are continuous streams of "ping" requests sent to special broadcast addresses as if they came from the targeted victim. All recipients of the request send a ping reply to the source address, causing the targeted computers to be overwhelmed with requests. This replication hammers the source address and consumes massive amounts of bandwidth. DoS attacks occur for both source and destination addresses.

So-called "SYN flood attacks" send numerous requests — called SYNchronizing segments — to a host computer to open a user session. These requests are made repeatedly as if they were from random locations on the Internet so that the servers can't distinguish between valid and invalid requests. Consequently, the systems under attack become overloaded processing the new requests, resulting in no valid requests being serviced at all.

Alteon's latest version of Web OS supports SYN flood protection, prevents attacks via Internet Control Message Protocol — both smurf attacks and "ping of death" attacks — and provides for global distribution of Web content.

The combination of high-performance filtering and global traffic engineering provides for an efficient means by which Internet sites can reduce their vulnerability to service outages when unexpected events occur — whether from legitimate or malicious reasons.

Check Point Enables Secure Streaming Media

A critical factor in the success of streaming media deployment lies in the ability to secure the transmissions. Check Point Software Technologies' Secure Virtual Network (SVN) architecture is the first solution to securely enable streaming audio and video media applications with integrated Quality of Service (QoS), policy enforcement and centralized management. SVN provides the reliability, manageability and security that e-businesses require for successful delivery of streaming media to users across the Internet, intranets and extranets.

"Companies want to deploy advanced streaming media solutions to support confidential employee, partner and customer communications without compromising their security policies or network data flow," said Kevin Unangst, group product manager, Digital Media Division, Microsoft.

Via its OPSEC (Open Platform for Security) Alliance, Check Point is extending the SVN architecture for streaming media by partnering with industry leaders to deliver solutions for secure e-business. Check Point's protocol support also secures live voice traffic along with Web graphics for e-commerce sites for enriched customer service and content delivery.

Check Point has embedded protocol support from leading vendors, such as Microsoft, RealNetworks and Apple, enabling the enterprise to leverage the SVN architecture to secure the client-server communication for confidential video conferencing, training or distance learning with full access control, user authentication and QoS.

To secure streaming media, Check Point has adopted the International Telecommunication Union H.323 standard and proprietary protocols such as RealTime Streaming Protocol (RTSP) and Windows Media. This enhancement allows customers to deploy multimedia applications with policy enforcement and QoS enabled by Check Point's patented Stateful Inspection and Intelligent Queuing technology.

"Secure streaming media is becoming a critical e-business technology across the Internet, intranet and extranets," said Asheem Chandna, VP of marketing and business development for Check Point Software. "Our SVN architecture provides a high-performance solution for securing confidential media streams while at the same time enabling sophisticated quality of service."

Warring Over Wireless Standards

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create services that combine high-speed mobile access with mobile multimedia and Internet Protocol-based services.

"With 3G, we will be able to make video calls, surf the 'Net and interact in an entirely different way — all from a handset or smart mobile device," said Jonas Twingler, director of GSM 3G. "The GSM Association has already commenced preparation of inter-operational standards for 3G. Now we are looking beyond the technology to the wider picture of integrated service offerings, commercial interoperability and more."

Juggling wireless standards is no easy task according to Patricia Sueltz, president of Software, Products and Platforms for Sun Microsystems.

"The products and services using wireless technology are growing significantly every day," said Sueltz. "Developing and defining a common wireless standard that a host of products and services can use is the key to the industry's continued growth and, ultimately, benefits the end-users."

The battle over wireless standards doesn't appear to be ending anytime soon. Although mobile device vendors, organizations and end-users will have to wait for a common standard, that doesn't mean the benefits of wireless devices cannot be enjoyed now.

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Appendix C

Evidence Appendix

Other than the reference attached to the Appeal Brief as Appendix B, no evidence was submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132, and no other evidence was entered by the Examiner and relied upon by Appellants in the Appeal.

Appendix D

Related Proceedings Appendix

As stated on page 3 of this Appeal Brief, to the knowledge of Appellants' Counsel, there are no known appeals, interferences, or judicial proceedings that will directly affect or be directly affected by or have a bearing on the Board's decision regarding this Appeal.